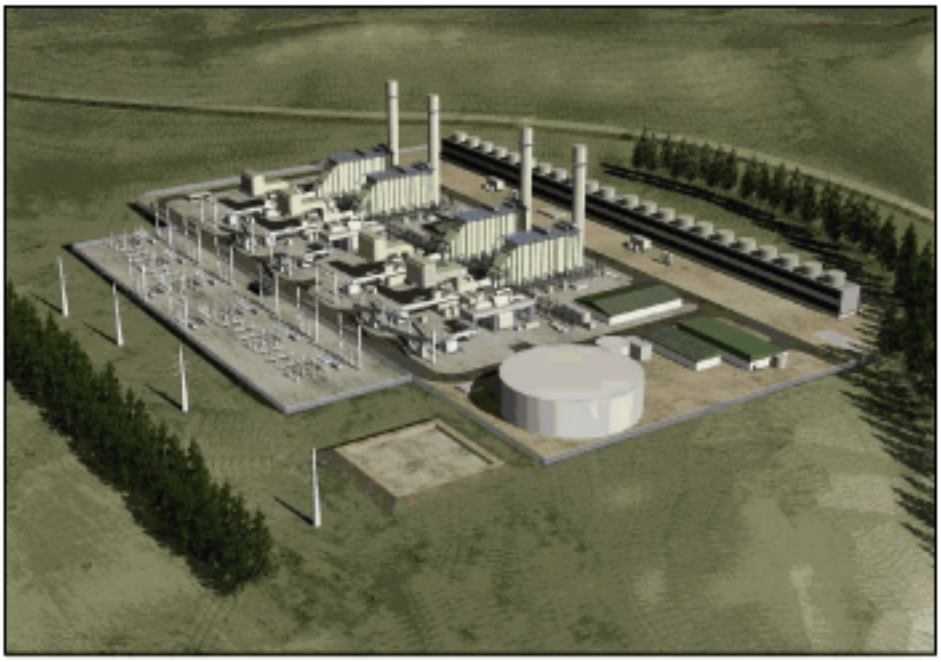
Final Staff Assessment Addendum
Reclaimed Water Supply Pipeline

TESLA POWER PROJECT

Application For Certification (01-AFC-21)
Alameda County



CALIFORNIA ENERGY COMMISSION

STAFF REPORT

JULY 2003
(01-AFC-21)

Gray Davis, Governor

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RECLAIMED WATER SUPPLY PIPELINE ADDENDUM
TESLA POWER PLANT PROJECT (01-AFC-21)

EXECUTIVE SUMMARY
RECLAIMED WATER SUPPLY PIPELINE

Jack W. Caswell, Project Manager

INTRODUCTION

The applicant proposes to use an average of 5,100 to a maximum of 6,400 acre-feet of water per year from the California Aqueduct via a contract between the applicant, Buena Vista Water Storage District and the Rosedale-Rio Bravo Water Storage District in Kern County. Physical delivery of the water supply would be accomplished through a proposed 1.7-mile pipeline from a proposed new turnout on the California Aqueduct, located near Midway Road, to the Tesla Power Plant (TPP) (01-AFC-21). State Water Project water delivered to the TPP would be reclassified as local Kern County water while a like amount of local Kern County water would be reclassified as State Water Project water for use in Kern County. No additional annual diversion into the California Aqueduct would occur and no State Water Project entitlements would be transferred.

On April 8, 2003, the Energy Commission staff published a Final Staff Assessment (FSA) for the TPP. Staff's FSA provided analysis on the City of Tracy's reclaimed water resource under the **Soil and Water Resources** section titled, Appendix A, Water Supply and Cooling Option. As a result of its independent evaluation of the TPP (01-AFC-21), staff concluded that an Alternative Water Supply and Cooling Option resource is available and feasible. Therefore, staff believes that the TPP proposed plan would be a waste and unreasonable use of fresh water. California law and policy encourages the conservation of fresh water and use of alternative cooling sources where feasible.

This Addendum to the FSA contains a complete analysis of the 11-mile pipeline route, construction, and water pumping facilities necessary for delivery of the reclaimed water from the City of Tracy's proposed Wastewater Treatment Plant (TWWTP) to the TPP site. This document contains analyses similar to those contained in Environmental Impact Reports required by the California Environmental Quality Act (CEQA). This analysis is based upon information from: 1) the FSA, 2) FSA Appendices, 3) site visits, 4) public workshops, 5) field surveys, 6) supplementary information from state and local agencies, and 7) existing documents and publications.

PIPELINE AND ROUTE DESCRIPTION

The proposed pipeline would consist of an 11-mile, 30-inch diameter pipe, and two water pumping stations to deliver the reclaimed water to the TPP site. The pipeline route runs west along the north end of the proposed TWWTP, along the road inside the TWWTP, to the intersection of Holly Drive and Arbor Avenue. The pipeline would then cross Holly Drive west through a field within a public utility easement to Tracy Boulevard (this property is being acquired by the City of Tracy). The pipeline crosses Tracy Boulevard west through a field within a public utility easement to Corral Hollow Road (this is also property being acquired by the City of Tracy). The pipeline would then cross Corral Hollow Road and turn south on Corral Hollow Road for approximately 300 feet. At that point, the pipeline turns west through a field consisting of two parcels within a public utility easement, to Naglee Road in approximate alignment with Middle Road

located due west (this segment includes crossing a small local aqueduct serving irrigation water supply). The pipeline then crosses Naglee Road west on Middle Road to San Jose Road, south on San Jose Road to its terminus at the Southern Pacific Railway. The pipeline would cross under the Southern Pacific Railway and across Byron Road and proceed west on Grant Line Road. At this point, horizontal directional drilling would be required under the Delta Mendota Canal and the California Aqueduct. The pipeline would turn south on Midway Road immediately west of the California Aqueduct, and continues south on Midway Road to the TPP site.

One of two pumping stations would be located at the TWWTP; the other would be located at one of two alternative sites. Alternative Site A (staff's preferred location) would be located adjacent to Grant Line Road, along a segment between the undercrossing of the Byron Bethany Irrigation District Canal and the San Joaquin County/Alameda County line, prior to crossing the Delta Mendota Canal and California Aqueduct. Alternative Site B would be located on Midway Road, adjacent to the California Aqueduct, in the same general location as originally proposed by the applicant (see **Executive Summary Figure 1**, Reclaimed Water Supply Pipeline Route).

STAFF'S ASSESSMENT

Each technical section in this analysis has a discussion of impacts, and where appropriate, mitigation measures and conditions of certification. The analysis includes staff's assessments of:

- the environmental setting of the proposal;
- environmental impacts, and measures proposed to mitigate these impacts if necessary;
- engineering design suggestions of the proposed pipeline and pumping facilities, and engineering measures proposed to ensure the pipeline can be constructed and operated safely and reliably;
- compliance of the pipeline with all applicable laws, ordinances, regulations and standards (LORS) during construction and operation; and
- proposed conditions of certification.

SUMMARY OF ANALYSIS

The following table summarizes staff's technical analysis. The discussions following the table summarize mitigation measures staff is proposing for the licensing of the pipeline. Please note technical sections denoted with an asterisk. The sections contain additional Conditions of Certification to the FSA and are discussed below.

Technical Discipline	Environmental/ System Impact	Conforms with LORS
Air Quality	Impacts Mitigated	Yes
Biological Resources	Impacts Mitigated*	Yes
Cultural Resources	Impacts Mitigated*	Yes
Facility Efficiency	None	NA
Facility Reliability	None	NA
Facility Design	None	Yes
Geology & Paleontology	Impacts Mitigated	Yes
Hazardous Materials	Impacts Mitigated	Yes
Land Use	Impacts Mitigated	Yes
Noise and Vibration	Impacts Mitigated	Yes
Public Health	Impacts Mitigated	Yes
Socioeconomics	Impacts Mitigated	Yes
Traffic and Transportation	Impacts Mitigated	Yes
Transmission Line Safety	None	NA
Transmission System Eng.	None	NA
Visual Resources	Impacts Mitigated*	Yes
Waste Management	Impacts Mitigated*	Yes
Water / Soil Resources	Impacts Mitigated*	Yes
Worker Safety	Impacts Mitigated	Yes
* These sections contain additional Conditions of Certification to the FSA.		

BIOLOGICAL RESOURCES

Conditions of Certification **BIO-5**, **BIO-12, and BIO-13,** contained in the FSA dated April 8, 2003, have been modified to include the staff proposed reclaimed water supply pipeline. Staff has also added two new Conditions of Certification. Condition of Certification **BIO-15** addresses impacts to the big tarplant and **BIO-16** addresses compliance with the San Joaquin County Multi-species Habitat Conservation and Open Space Plan. These additional mitigation measures would prevent significant impacts to sensitive plants and wildlife during construction and operation of the proposed reclaimed water pipeline and pumping facilities.

CULTURAL RESOURCES

Staff has reviewed the reclaimed water pipeline and recommends the adoption of additional conditions of certification, **CUL–10** and **CUL-11**, as outlined in the Cultural Resources section of the addendum. These additional mitigation measures and the existing FSA Conditions of Certification **CUL-1** through **CUL-9** would ensure that no significant impacts would occur to cultural resources from the construction of the reclaimed water pipeline and pumping facilities.

SOIL AND WATER RESOURCES

The reclaimed water supply pipeline would have no significant impacts pertaining to soil and water resources.

Additionally, staff has reviewed the time frame associated with the delivery of the reclaimed water supply and has provided additional analysis addressing the delivery of

fresh interim water to the TPP in the event the pipeline were not completed prior to TPP's on-line date.

The City of Tracy is scheduled to be producing tertiary-treated wastewater by January 2006. In the event the TPP becomes operational prior to the availability of recycled water, the City of Tracy would deliver groundwater as an interim supply. Staff has conducted this analysis with the assumption that additional surface water will not be available to the City of Tracy. Staff acknowledges that the City of Tracy is attempting to acquire additional surface water supplies and expects to reduce the reliance on groundwater over time. Staff also acknowledges that the potential for any TPP startup or operational water demand in 2005 is unlikely, considering the typical 24 months needed for construction of similar power plants approved by the Energy Commission.

Construction of the recycled water pipeline and pump stations would not result in any significant adverse effects to soil or water resources. Staff has recommended proposed Conditions of Certification as contained in the FSA (CEC 2003). Additional conditions have been added to the Soil and Water addendum addressing the proposed reclaimed water supply and pipeline; these additional requirements are **Soil and Water-11, 12, 13, 14,** and **15,** pertaining to the staff proposed alternative reclaimed water supply, pipeline and interim water supply. These additional conditions ensure that the use of the reclaimed water or interim water supply would have no significant impacts from the delivery and construction of the proposed reclaimed water pipeline, pumping facilities, and water supply.

Staff has provided additional information in the Soil and Water addendum about the reduction in discharge from the TWWTP into the Old River effluent. Staff has concluded, as a result of providing recycled water to the TPP, no significant adverse impacts would occur and water quality in Old River would improve slightly.

VISUAL RESOURCES

Conditions of Certification **VIS-1** and **VIS-3** have been modified and a new condition, **VIS-7**, has been added to ensure that no significant impacts would occur from the construction and operation the reclaimed water pipeline and pumping stations. The revisions of the conditions and the additional condition are in the Visual Resources section of this addendum.

WASTE MANAGEMENT

Staff conducted a Phase I and Phase II Environmental Site Assessment (ESA) of the reclaimed water pipeline route. The Phase II ESA concluded it would be unlikely that construction of the reclaimed water pipeline or pumping station would result in the encounter of hazardous soils. However, the Phase II also recommends that additional areas be tested prior to construction of the pipeline (the land owner had refused access to obtain samples); therefore staff proposes the adoption of new condition of certification **WASTE-7**. With the inclusion of **WASTE-7**, staff concludes that no significant impacts would occur as a result of the construction and operation of the reclaimed water pipeline and pumping facilities. The Phase I and Phase II ESAs are Attachments 1 and 2 of this addendum.

STAFF'S CONCLUSIONS AND RECOMMENDATION

Written support for the Reclaimed Water Supply for the TPP has been received from the U.S. National Marine Fisheries Service, U.S. Fish and Wildlife Service, State Water Resources Control Board, City of Tracy, Alameda County Zone 7 Water District, Contra Costa Water District, and the Department of Fish and Game. At this time, with the exception of the applicant, staff has not received indication of opposition to the staff proposed reclaimed water supply for the TPP. With the recommended conditions of certification filed in the FSA, the additional conditions and modified conditions described in this document, staff concludes the Reclaimed Water Supply Pipeline would have no significant impacts on the community or environment. Staff concludes that this proposed water supply would improve water quality in the Old River and would conserve fresh water supplies in California.

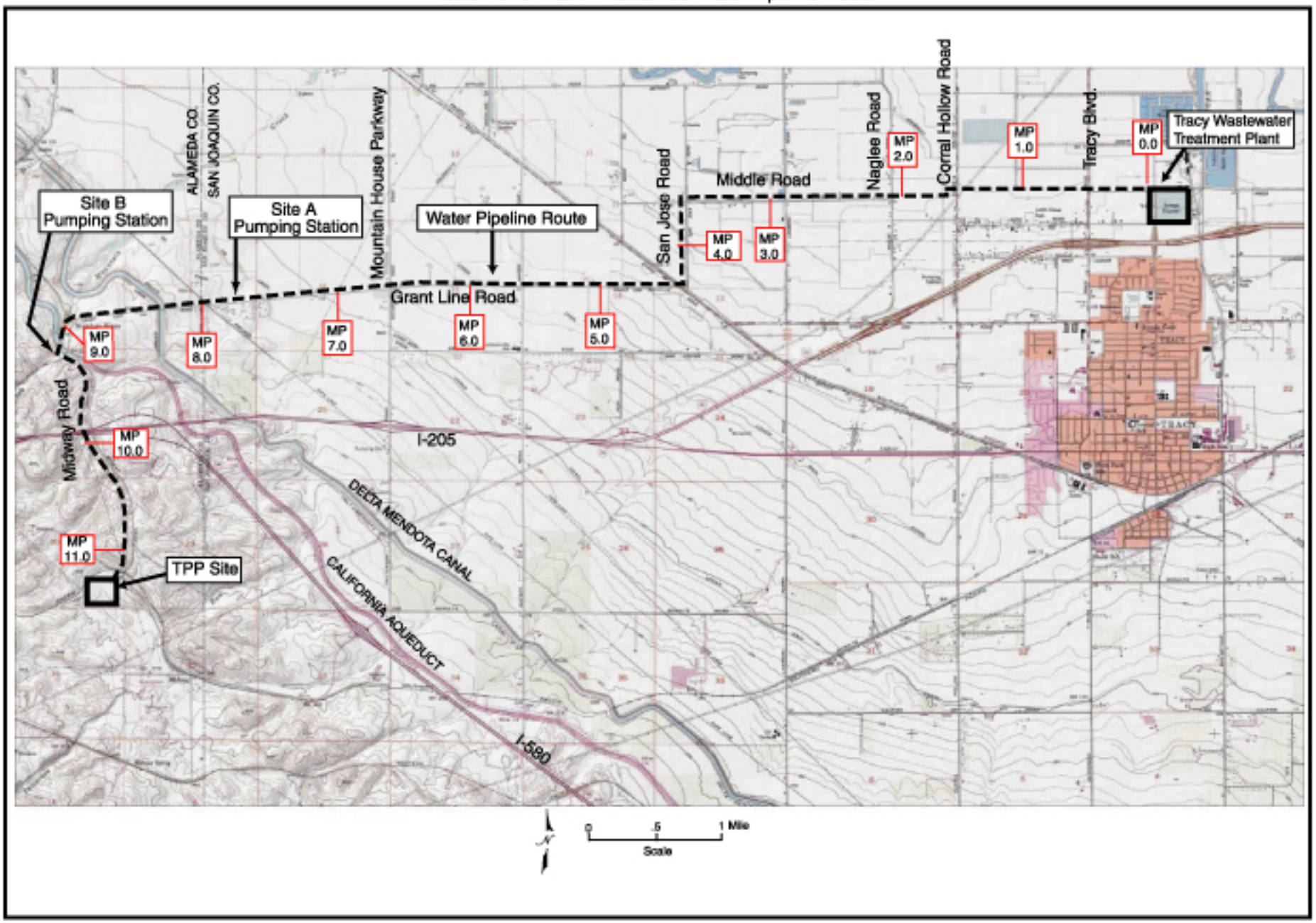
Additionally, staff concludes that the availability of interim water from the City of Tracy is adequate should it be required prior to the completion of the TWWTP. The interim fresh water supplied by the City of Tracy would not cause significant impacts to water supply or water quality.

REFERENCES

CEC (California Energy Commission). 2003. Final Staff Assessment for the Tesla Power Plant Project. April.

EXECUTIVE SUMMARY - Figure 1

Tesla Power Plant - Reclaimed Water Pipeline Route



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JULY 2003

SOURCE: CEC 2003, Water Resources Appendix A, Figure 6

AIR QUALITY

Testimony of Brewster Birdsall

INTRODUCTION

This discussion addresses the potential criteria pollutant emissions and associated air quality impacts of selecting the Reclaimed Water Supply Pipeline described in the **Soils and Water Resources** section of the Tesla Power Project (TPP) Final Staff Assessment (FSA).

LAWS, ORDIANCES, REGULATIONS, AND STANDARDS (LORS)

San Joaquin Valley Air Pollution Control District (SJVAPCD) rules (Regulation IV, Prohibitions and Regulation VIII, Fugitive PM_{10} Control) apply to construction activities within San Joaquin County. Bay Area Air Quality Management District (BAAQMD) rules that would apply to construction activity within Alameda County are limited to general nuisance provisions and limitations on particulate matter and visible emissions (FSA, Air Quality section).

ANALYSIS

Construction of the 11-mile recycled water pipeline and pump stations would generate offsite emissions from construction equipment that would be similar in nature to those identified for the Midway Road water line as proposed by the applicant (AFC Appendix K-3; also FSA, Air Quality Table 10). The short-term emissions, on an hourly or daily basis, would likely be similar, given a similar level of day-to-day construction activity, but the emissions would extend for a longer duration because of the additional length of the recycled water pipeline. Because the duration of work needed for the 11-mile pipeline would be approximately six times longer than the work for the originally-proposed Midway Road pipeline (1.7 miles), total construction emissions for the pipeline would be approximately six times higher. Additionally, a portion of the construction emissions would occur in San Joaquin County and would be subject to the more-stringent dust control regulations of the San Joaquin Valley Air Pollution Control District. Staff recommends mitigation for reducing emissions from construction (**AQ-SC1** through **AQ-SC4**).

Using a recycled water supply could change operational emissions at the power plant. If the recycled water contains excessive quantities of ammonia, a small fraction may be emitted in the vapor phase. This depends on the chemistry of the cooling water and is not anticipated to cause or contribute to an adverse impact. If the total dissolved solids (TDS) content of the recycled water exceeds that anticipated for the original supply, cooling tower drift emissions in the form of particulate matter (PM_{10}) may change. The maximum TDS assumed in the emission calculations is 1,878 parts per million by weight (ppmw) (FSA, Air Quality Table 11). Prior to delivering recycled water to the project, the City of Tracy would implement a tertiary treatment system that would achieve approximately 1,020 ppmw TDS. Because the recycled water supply would

have TDS levels below 1,878 ppmw, the cooling tower drift emissions would not be greater than those characterized in the AFC and FSA.

Operational emissions along the recycled water pipeline would only occur if internal combustion engines would be necessary for pumping or emergency power. Because pumping recycled water to the power plant site would be accomplished with electric pumps, no offsite operational emissions are expected.

COMPLIANCE WITH LORS

Pipeline construction activities, with staff-proposed mitigation, would be likely to comply with the SJVAPCD and BAAQMD requirements.

COORDINATION WITH OTHER AGENCIES

Coordination with other agencies has been discussed in the FSA. No agency coordination would be necessary to achieve compliance with air quality requirements.

CONCLUSIONS

The reclaimed water pipeline would cause an increase in the total amount of criteria air pollutant emissions due to construction of the longer 11-mile pipeline and pump stations relative to the proposed 7-mile pipeline in the AFC. However, hourly and daily emissions would remain the same, given a similar level of day-to-day construction activity. Operational emissions from cooling tower drift (PM_{10}) would change if the TDS of the recycled water would be substantially different from that of the proposed water. However, because the AFC overestimates the PM_{10} from drift, the maximum anticipated drift emission rates would not change from the levels presented in the AFC.

PROPOSED CONDITIONS OF CERTIFICATION

Staff recommends that the applicant implement staff's Conditions of Certification regarding construction emissions to minimize impacts of construction (FSA, **AQ-SC1** through **AQ-SC4**). With these measures, no substantial change in air quality impacts would occur.

REFERENCES

References are the same as those in the FSA.

BIOLOGICAL RESOURCES

Testimony of Andrea Erichsen, Richard York, and Stuart Itoga

INTRODUCTION

This section provides Energy Commission staff's analysis of biological resources and potential adverse impacts of a proposed 11-mile long, 30-inch diameter reclaimed water supply pipeline. This pipeline would provide reclaimed water from the City of Tracy's Wastewater Treatment Plant located (TWWTP) in San Joaquin County, to the proposed Tesla Power Plant (TPP) project in Alameda County. The treated wastewater would be used to cool the proposed TPP. As previously proposed by the applicant, cooling water would not be discharged from the TPP site but would be treated by a zero liquid discharge (ZLD) system. For a complete description of the pipeline route and installation, refer to the **Executive Summary** and **Soil and Water Resources** sections of this Addendum.

This analysis focuses on impacts to state- and federally-listed species, fully protected species, species of special concern, wetlands, and other areas of critical biological concern. Staff describes the biological resources of the reclaimed water supply pipeline; identifies impacts to biological resources; determines the need for mitigation; determines the adequacy of mitigation, and, where necessary, specifies additional mitigation measures to reduce impacts to less than significant levels; determines compliance with applicable laws, ordinances, regulations, and standards; and recommends Conditions of Certification.

To determine the ecological significance of the proposed reclaimed water supply pipeline, staff relies primarily upon standards and guidelines established by the Federal and State Endangered Species Acts, the California Environmental Quality Act (CEQA), and the Migratory Bird Treaty Act. Staff must determine significance based on whether populations of endangered, threatened, protected, and sensitive species or biotic communities would be affected adversely by the TPP and this proposed reclaimed water supply pipeline. Significant impacts are those which affect a species' population size, geographic range, habitat, nesting success, and migration, or those which diminish, fragment, contaminate, or otherwise threaten biotic communities. Compliance with the California Department of Fish and Game Code and other state and local regulations also help staff assess impacts. The above regulations direct applicants to avoid and mitigate for the loss of habitat for sensitive species and to obtain permits for incidental take of federal and state protected species.

This analysis is based upon information provided within the **Executive Summary** and **Soil and Water Resources** sections of this Addendum, field visits, biological surveys, and discussions with various agency representatives, including the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and the San Joaquin Council of Governments (SJCOG). Information specific to wastewater availability was obtained from the City of Tracy (2001).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The owner, operator, and builder of the proposed reclaimed water supply pipeline would need to abide by the federal, state, and local laws, ordinances, regulations, and standards (LORS) listed below and discussed in the Final Staff Assessment (FSA) (CEC 2003). A local LORS pertinent only to the San Joaquin County portion of the proposed pipeline is discussed below.

FEDERAL

Endangered Species Act of 1973
Migratory Bird Treaty Act
Bald and Golden Eagle Protection Act
Clean Water Act of 1977
The Recovery Plan for Upland Species of the San Joaquin Valley, California

STATE

California Endangered Species Act of 1984
California Code of Regulations
Protection for Migratory Birds
Protection for Fully Protected Species
Protection of Nest or Eggs
Protection of Significant Natural Areas
Streambed Alteration Agreement
Native Plant Protection Act of 1977
Delta Protection Act of 1992

LOCAL

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP)

The SJMSCP requires compensation for activities that convert Open Space to non-Open Space uses in order to provide for the long-term management of plant, fish and wildlife species, especially those that are currently listed, or may be listed in the future, under the Federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA), to protect the region's agricultural economy, and to preserve landowner property rights (San Joaquin County 2000). The 97 Covered Species (San Joaquin County 2000, Table 2-2) include 25 state- and/or federally-listed species. The SJMSCP Covered Species includes 27 plants (6 listed), 4 fish (2 listed), 4 amphibians (1 listed), 4 reptiles (1 listed), 33 birds (7 listed), 15 mammals (3 listed), and 10 invertebrates (5 listed). The federal and state listed San Joaquin kit fox is a focal species in this plan.

The SJMSCP requires compensation for Conversions of Open Space for the following activities: urban development, mining, expansion of existing urban boundaries, non-agricultural activities occurring outside of urban boundaries, levee maintenance undertaken by the San Joaquin Area Flood Control Agency, transportation projects, school expansions, non-federal flood control projects, new parks and trails,

maintenance of existing facilities for non-federal irrigation district projects, utility installation, maintenance activities, managing preserves, and similar public agency projects.

PROJECT LOCATION AND SETTING

Reclaimed Water Pipeline

The proposed reclaimed water pipeline would follow a route as shown in the **Executive Summary Figure 1**. Approximately 11 miles in length (17.6 km), the pipeline would originate from the northwest corner of the Tracy Waste Water Treatment Plant (TWWTP) in San Joaquin County and terminate at the proposed TPP site in Alameda County. The route of the reclaimed water pipeline between mile posts (MP) 9.0 through 11.0 would be identical to the raw water pipeline route analyzed in the FSA.

Horizontal directional drilling (HDD) is likely to be used to install the pipeline across the Delta Mendota Canal and the California Aqueduct, requiring approvals from the U.S. Bureau of Reclamation and California Department of Water Resources. Above-ground installation or jack and bore techniques would also be evaluated. Please refer to the **Soil and Water Resources** section of this Addendum for a more detailed discussion of pipeline installation methods.

BIOLOGICAL SETTING

On a regional scale, the biological setting for the proposed reclaimed water supply pipeline does not differ substantially from the setting information contained in the FSA. However, the setting through which most of the reclaimed water pipeline route would be constructed (MP 0.0 to MP 8.0) is more highly disturbed and impacted by human activities such as farming and urbanization. The Old River is a natural waterway that lies less than 2 miles north of the proposed pipeline alignment. There are several manmade sloughs (Sugar Cut Slough, Tom Paine Slough, and Paradise Cut Slough) located north of the TWWTP that are discussed in City of Tracy Wastewater Treatment Plant Facilities Plan (City of Tracy 2001, Section 4.8).

The Tesla Power Plant Project Final Staff Assessment Addendum Biological Appendices (a separately filed document) contains the following **Biological Resource Appendices**: A (summary of survey effort), B (Field Survey Report Forms), C (vegetation maps), D (list of plant species observed), E (map of special status species records and observations), F (list of wildlife species observed), and G (results of the California Natural Diversity Database query) (CEC 2003b). These appendices are available from Energy Commission Docket upon request.

Appendix E provides a map showing vegetation and hydrologic features located within the project area. Along the first nine miles of the proposed reclaimed water pipeline route there is a mixture of grain and pasture crops, dairies, as well as numerous ranches, farmsteads, and other rural businesses. Irrigation ditches and canals, landscaping, windbreaks, fallow vegetation, tree groves and orchards, as well as scattered natural and manmade waterways are also found within these nine miles. The proposed pipeline route crosses under the Delta Mendota Canal and the California Aqueduct between MP 9.0 and 10.0 and terminates at MP 11.0+ at the proposed TPP

site, an area dominated by annual grasslands used for grazing as well as habitat conservation for San Joaquin kit fox (please see the FSA (CEC 2003) on Biological Resources section for discussion of the Haera Mitigation Bank).

The following section describes the field survey methods employed by staff. It also discusses the biological conditions of the project area, the local vegetation and habitat types, local wildlife species, and special status species known, or with a potential, to occur in the general vicinity. Maps and additional survey results are attached in Appendices A, B, C, D, E, and F (CEC 2003b).

Field Methods

This analysis of biological resources is based upon information gathered during a review of reference materials, aerial photographs, agency comments, and field surveys. Staff did not conduct USFWS protocol level surveys for San Joaquin kit fox, California red-legged frog, or California tiger salamander. Rather, species presence was assumed where potentially suitable habitat exists. Survey guidelines were followed for burrowing owl and Swainson's hawk surveys (CBOC 1993; SHTAC 2000).

In total, five reconnaissance field surveys were completed on March 27, April 9, April 18, May 6, and May 21, 2003. Staff conducted these surveys to determine the status of biological resources along the proposed pipeline route. A summary of field survey effort is provided in Appendix A (CEC 2003b). In general all surveys focused on 1) identifying nests, burrows, breeding habitat, or other habitats of sensitive species within 200 meters of the proposed construction area (unless otherwise indicated) and 2) identifying occupied or potentially occupied habitats within a 1-mile radius of the proposed reclaimed water supply pipeline route. Appendix B contains California Natural Diversity Database (CNDDB) Field Survey Forms completed by staff to document sensitive species detected during biological surveys (CEC 2003b). Staff has prepared a list of species observed during field surveys. These lists are contained in Appendices D and F (CEC 2003b).

Vegetation and Sensitive Plant Surveys

Staff conducted focused surveys documenting vegetation types and observations of rare and common plant species. The results are contained in Appendices C and D (CEC 2003b).

San Joaquin Kit Fox

Field surveys for San Joaquin kit fox were based on an assumption of presence (USFWS 1983, 2002a, 2002b). All surveys collected information on potential use of the project area by kit fox. A focused survey to identify occupied and potentially occupied dens within approximately 100 meters on either side of the proposed pipeline route was completed by Linda Spiegel on March 27, 2003. Additional USFWS protocol-level survey data were provided by the applicant for the segment of the route between the Delta Mendota Canal and the TPP project site along North Midway Road (FWEC 2002a; FPL 2001a, Figure 5.3-3). This area between MP 9.0 and 11.0 contains habitat with the highest potential to support San Joaquin kit fox and was assessed in the FSA (CEC 2003).

Burrowing Owl

Five burrowing owl surveys were conducted which consisted of windshield surveys (from a vehicle while traveling less than 20 miles per hour) and walking surveys along roads and potentially suitable habitat such as levees, canals, and berms. The survey goal was to detect owls and potentially occupied habitat within 150 meters of the construction area as well as within a one-mile radius of the proposed route (CBOC 1993). The applicant also conducted protocol-level surveys for burrowing owl between the Delta Mendota Canal and the TPP project site along North Midway Road (FPL 2001, Figure 5.3-3; FWEC 2002a).

Swainson's Hawk

Swainson's hawk surveys (five total) followed guidelines provided by the Swainson's Hawk Technical Advisory Committee (SHTAC 2000). All potential nesting habitat and foraging habitat was identified 150 meters from the construction area as well as within a 1 mile radius of the proposed route.

California Red-legged Frog and California Tiger Salamander

Surveys for suitable habitat were conducted to identify potential breeding, estivation, and migration habitats. Four surveys were conducted to map and evaluate potentially suitable and impacted habitat areas. One focused survey was conducted on May 21, 2003 based upon habitat evaluations collected during prior surveys.

Special-Status Species

Special-status species are protected under the federal ESA and the CESA. Sensitive plants may also be listed by the California Native Plant Society (CNPS). Appendix G provides a printout of CNDDB records (CDFG 2003) available for the project region (CEC 2003b).

Special-Status Plant Species

Biological Resources Table 1 identifies the sensitive plants known to occur in the region of the reclaimed water pipeline alignment. However, the area that would be traversed by the proposed pipeline contains primarily ruderal, non-native, and agricultural vegetation.

Biological Resources Table 1
Special Status Plants That Occur in the Project Region

Common Name	Scientific Name	Status*	Habitat
Large-flowered fiddleneck	*Amsinckia grandiflora*	FE/CE/1B	grasslands
Heartscale	*Atriplex cordulata*	--/--/1B	scrub, meadows, & grasslands
Brittlescale	*Atriplex depressa*	--/--/1B	scrub, meadows, vernal pools, & grasslands
San Joaquin spearscale	*Atriplex joaquiniana*	--/--/1B	scrub, meadows, & grasslands
Big tarplant	*Blepharizonia plumosa ssp. plumosa*	--/--/1B	grasslands
Lemmon's jewelflower	*Caulanthus coulteri var. lemmonii*	--/--/1B	pinyon pine woodland & grasslands
Recurved delphinium	*Delphinium recurvatum*	--/--/1B	scrub & grasslands
Mt. Diablo buckwheat	*Eriogonum truncatum*	--/--/1A	chaparral, scrub, & grasslands
Round-leaved filaree	*Erodium macrophyllum*	--/--/2	woodlands & grasslands
Diamond-petaled poppy	*Eschscholzia rhombipetala*	--/--/1B	grasslands
Rose mallow	*Hibiscus lasiocarpus*	--/--/2	freshwater marsh
Mason's lilaeopsis	*Lilaeopsis masonii*	--/CR/1B	freshwater marsh
Delta mudwort	*Limosella subulata*	--/--/2	freshwater marsh
Showy madia	*Madia radiata*	--/--/1B	woodlands & grasslands
Rayless ragwort	*Senecio aphanactis*	--/--/2	chaparral woodlands, coastal scrub
Showy Indian clover	*Trifolium amoenum*	FE/--/1B	grasslands
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	--/--/1A	grasslands

*** Status legend: FE** = Federal listed Endangered, **CR** = State (California) listed Rare, **1A** = CNPS List 1A (Plants Presumed Extinct in California), **1B** = CNPS List 1B (Rare, Threatened or Endangered in California and Elsewhere), **2** = CNPS List 2 (Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere).
Source: California Native Plant Society On-Line Inventory (May 2003) and California Department of Fish and Game Natural Diversity Data Base (May 2003)

Results of Sensitive Plant Surveys

No sensitive plants were found by staff during spring 2003 field surveys of the reclaimed water pipeline route. As discussed in more detail below, staff has assumed presence of the big tarplant (*Blepharizonia plumosa* ssp. *plumosa*) within the project area because surveys for this species must be conducted in the late summer and fall. The majority of the sensitive plants identified for the proposed project region are found in valley and foothill grasslands habitat, with the remainder recorded from freshwater marsh habitat. The closest grassland habitat to the alignment is located between MP 8 and MP 11, at the western end of the pipeline route, in Alameda County. The closest freshwater marsh habitat to the proposed pipeline route is found approximately 2 miles north of the proposed pipeline route along the Old River. A vegetation map has been prepared for the entire pipeline route and can be found in Appendix C (CEC 2003b). In addition, a list of plants identified during sensitive plant surveys can be found in Appendix D (CEC 2003b).

Only ruderal and agricultural habitat is found along the proposed pipeline route between MP 0.0 and 8.0. The only vegetation of interest between these mile posts are several areas adjacent to the proposed pipeline route that have been planted with trees as windbreaks or for other agricultural and landscape uses. Many of these trees (e.g., California black walnut, various gum species, and beefwood) are quite large, and provide numerous nesting and perch opportunities for crows, yellow-billed magpies (*Pica nuttalli*), and birds of prey, including Swainson's hawks (California Threatened).

The proposed pipeline route region historically may have contained vernal pool habitat; however none exists today (CDFG 1998). The only wetland vegetation (e.g. cat-tails, *Typha latifolia*) found along the proposed pipeline route is associated with various ditches and canals used for agricultural irrigation.

There is a comparatively large wetland found immediately adjacent to the proposed pipeline route at approximately MP 6.5 at the southwest corner of the junction of Mountain House Parkway and Grant Line Road. This wetland appears to be the result of runoff from an adjacent dairy. Staff believes that impacts to this wetland can easily be avoided by locating the pipeline on the north side of Grant Line Road.

At MP 8.0, the land transitions from flat, agricultural areas currently used for alfalfa and other hay crops to rolling terrain and annual grasslands. At Mountain House Parkway (MP 9.0), there are a number of large Fremont cottonwoods (*Populus fremontii*), tree of heaven (*Ailanthus altissima*) trees, and other landscape trees associated with a remnant riparian area and woodland associated with seasonally wet Mountain House Creek. At MP 9.2 and west of the California Aqueduct, the pipeline route leaves Grant Line Road and travels south along North Midway Road. Along North Midway Road, vegetation consists primarily of landscape trees and shrubs associated with rural development (ranchettes) or ruderal vegetation and annual grasslands associated with pasture for grazing animals as the pipeline route terminates at the proposed Tesla Power Plant site.

Two sensitive plants are known to occur near the proposed Tesla Power Plant site and the proposed water supply pipeline route. An occurrence of the San Joaquin spearscale (*Atriplex joaquiniana*) is found in a meadow/seep area approximately 1.5 miles northwest of the proposed pipeline route, between the Delta Mendota Canal and the California Aqueduct. This plant was searched for during sensitive plant surveys, however no new occurrences were found along the proposed pipeline route. Staff did not expect to find any new occurrences of this species since no seeps or meadow habitat is found associated with the proposed pipeline route.

A second sensitive plant, the big tarplant, is found in gently sloping grassland habitat approximately 1 mile southeast of the proposed power plant site on the eastern edge of the Tesla Substation (CDFG 2003). This rare grassland subspecies was not seen during staff's field surveys since staff's field surveys were completed in March, April, and May, and this subspecies is not identifiable until late summer and early fall (September to November).

Since potentially suitable habitat exists for the big tarplant along the proposed water supply pipeline between MP 8.0 and the pipeline terminus at the TPP site, as well as on the project site, additional field surveys need to be completed at the appropriate time of year by a trained botanist(s) prior to project construction to determine whether or not this sensitive plant could be impacted by installation of the proposed reclaimed water pipeline. Conditions of certification **BIO-5** and **BIO-15** require the appropriate surveys and the incorporation of mitigation (if necessary) into the Biological Resources Mitigation and Monitoring Plan (BRMIMP).

Occurrence of Riparian and Wetland Habitats

Riparian habitats provide nesting, hunting, and roosting areas for diverse animal species and provide habitat for native plants. The area contains remnant riparian communities to the north along Old River (City of Tracy 2001). Riparian vegetation also exists in Mountain House near the intersection of North Midway Road and Grant Line Road (near MP 9.0).

Appendix C provides a map of vegetation in the area of the proposed reclaimed water pipeline route (CEC 2003b). The area containing the proposed route is open cropland, however, there are scattered woodlands that vary in size and may be planted or natural. There are also areas of landscaping in addition to planted windbreaks and hedgerows. Walnut trees (*Juglans californica*) line both sides of Grant Line Road between MP 7.0 and 8.0.

Wetlands are sensitive habitats characterized by many uniquely adapted plant and animal communities. Federal and state laws provide special protection for wetlands because of their rarity and historic losses resulting from draining and filling, and because they provide a variety of valuable ecosystem benefits such as groundwater recharge, flood buffering, soil retention, and wildlife habitat. Within the project area, wetlands were found in ditches, swales, and ponds along Grant Line Road, Middle Road, and Larch Road. Vernal pools do not exist within the area along the proposed pipeline route.

Open water habitats exist along Tom Paine Slough, Paradise Cut, Old River, and the Clifton Court Forebay (City of Tracy 2001). These areas may have associated riparian and wetlands along their boundaries. However, these areas would not be impacted by construction of the pipeline. The pipeline would be constructed underneath the California Aqueduct and the Delta Mendota Canal. These bodies of water are lined with concrete and do not support vegetation.

Special-Status Wildlife Species

The proposed project site lies within the ranges of special-status wildlife species listed in **Biological Resources Table 2** that may potentially occur in the region and may thus be adversely impacted by project construction, operation, and maintenance.

Biological Resources Table 2
Special-Status Wildlife Species That May Occur in the Project Area

Common Name	Scientific Name	Status*
Insects and Crustacea		
Longhorn fairy shrimp	*Branchinecta longiantenna*	FE/--
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT/--
Valley elderberry longhorn beetle	*Desmocercus californicus dimorphus*	FT/--
Curved-footed hygrotus diving beetle	*Hygrotus curvipes*	FSC/--
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE/--
California linderiella	*Linderiella occidentalis*	FSC/--
Molestan blister beetle	*Lytta molesta*	FSC/--
Fish		
Delta Smelt	*Hypomesus transpacificus*	FT/ST
Sacramento splittail	*Pogonichthys macrolepidotus*	FT/SSC
Winter run Chinook salmon	*Oncorhynchus tshawytscha*	FE/SE
Late Fall run Chinook salmon	*Oncorhynchus tshawytscha*	FC/SSC
Central Valley steelhead	*Oncorhynchus mykiss*	FT/--
Green Sturgeon	*Acipenser medirostris*	FSC/SSC
River Lamprey	*Lampetra ayresi*	FSC/SSC
Longfin Smelt	*Spirinchus thaleichthys*	FSC/SSC
Pacific Lamprey	*Lampetra tridentata*	--/SSC
Mammals		
Pacific western big-eared bat	*Corynorhinus townsendii townsendii*	FSC/SSC
Greater western mastiff bat	*Eumops perotis californicus*	FSC/SSC
Small-footed myotis bat	*Myotis ciliolabrum*	FSC/--
Long-eared myotis bat	*Myotis evotis*	FSC/--
Fringed myotis bat	*Myotis thysanodes*	FSC/--
Long-legged myotis bat	*Myotis volans*	FSC/--
Yuma myotis bat	*Myotis yumanensis*	FSC/SSC
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	FSC/SSC
Riparian woodrat	*Neotoma fuscipes riparia*	FE/SSC
San Joaquin pocket mouse	*Perognathus inornatus*	FSC/--
Riparian brush rabbit	*Sylvilagus bachmani riparius*	FE/SE
San Joaquin kit fox	*Vulpes macrotis mutica*	FE/ST
Reptiles and Amphibians		
California tiger salamander	*Ambystoma californiense*	FE*/ SSC
California horned lizard	*Phrynosoma coronatum frontale*	FSC/SSC/SP
Western pond turtle	*Clemmys marmorata*	FSC/SSC

California red-legged frog	*Rana aurora draytonii*	FT/SSC/SP
Foothill yellow-legged frog	*Rana boylii*	FSC/SSC/SP
Western spadefoot toad	*Scaphiopus hammondi*	FSC/CSC/SP
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT/ST
Giant garter snake	*Thamnophis gigas*	FT/ST
Birds		
Golden eagle	*Aquila chrysaetos*	SFP/SSC
Ferruginous hawk	*Buteo regalis*	FSC/MNBMC/SSC
Swainson's hawk	*Buteo swainsoni*	--/ ST
Northern harrier	*Circus cyaneus*	--/SSC
White-tailed kite	*Elanus leucurus*	--/ SFP
Burrowing owl	*Athene cunicularia*	FSC/MNBMC/ SSC
Short-eared owl	*Asio flammeus*	MNBMC/SSC
Mountain plover	*Charadrius montanus*	FPT/SC
Tricolored blackbird	*Agelaius tricolor*	FSC/SSC
Bell's sage sparrow	*Amphispiza belli belli*	FSC/SSC
Little willow flycatcher	*Empidonax traillii brewsteri*	FSC/MNBMC/SE
California horned lark	*Eremophila alpestris actia*	--/SSC
Greater sandhill crane	*Grus canadensis tabida*	--/SSC/FP
Loggerhead shrike	*Lanius ludovicianus*	MNBMC /SSC
White-faced ibis	*Plegadis chihi*	FSC/MNBMC/SSC

(Source: CDFG 2003; FPL 2001, Table 5.3-1)
Status Legend: FE = Federally listed as endangered. FE*=Federally endangered in Sonoma and Santa Barbara Counties. FT = Federally listed as threatened. FPE = Proposed endangered. FPT = Proposed threatened. FC = Candidate for listing as federal threatened or endangered. Proposed rules have not yet been issued because they have been precluded at present by other listing activity. FSC = Species of Special Concern threatened. SE = Species whose continued existence in California is jeopardized. ST = Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future. SC = State candidate for listing as threatened or endangered. SSC = California Department of Fish and Game Species of Special Concern (species with declining populations in California). SFP = Fully protected against take pursuant to the California Fish and Game Code Section 3503.5. SP= State Protected. MNBMC = Fish and Wildlife Service Migratory Nongame Bird of Management Concern. -- = No California or federal status.

Results of Surveys for Special-Status Wildlife Species

San Joaquin kit fox (Federally Endangered and California Threatened) - The entire area is within the existing northern range of the San Joaquin kit fox (USFWS 1998; USFWS 2002b; Ziener 1990a). Although no active dens were detected, suitable denning habitat was identified within the anticipated construction impact areas along the proposed reclaimed water pipeline alignment, especially between MP 8.0 and MP 11.0. Protocol-level surveys were not conducted and presence of San Joaquin kit fox in this area is assumed.

California red-legged frog (Federally Threatened, California Species of Special Concern) and California tiger salamander (Federally Endangered in Sonoma and Santa Barbara Counties, California Species of Special Concern) - The proposed reclaimed water pipeline would traverse portions of California red-legged frog historic range (Zeiner et al. 1988). In addition, CNDDB records of red-legged frog occurrences exist for areas within 5 miles of the west end of the proposed reclaimed water pipeline (MP 9.0 and 10.0) as referenced in Appendix E (CEC 2003b).

As previously noted, protocol level surveys to determine absence/presence of red-legged frog and California tiger salamander along the proposed pipeline were not conducted within the area of the proposed pipeline. Therefore, staff assumed presence of these species where potentially suitable habitat exists.

A reconnaissance-level survey to assess habitat suitability for red-legged frog, and California tiger salamander was conducted on May 21, 2003. Surveys identified limited habitat suitable for amphibians such as California red-legged frog. Suitable vernal pool and ephemeral water body habitat preferred by the California tiger salamander was not observed, although the species may estivate in grassland habitat near MP 11.0, and may disperse through certain areas (CDFG 2001a; Zeiner et al. 1988).

Reptiles - The Western pond turtle (Federal and California Species of Special Concern) may inhabit perennial, slow-moving waterways along the water pipeline route (Zeiner et al. 1988). Focused surveys were not conducted for Western pond turtle, however reconnaissance level surveys were conducted on April 18 and May 21, 2003. Western pond turtles could potentially occupy the wetland-tailwater pond at the corner of Mountain House Parkway and Grant Line Road. The pond turtle has also been observed along Paradise Cut and Old River (City of Tracy 2001; page 4.8-12), northeast of the proposed pipeline at MP 0.

According to surveys conducted in April and May, there are a few locations with suitable habitat for these species, as listed in **Biological Resources Table 3** and discussed below.

Biological Resources Table 3
Summary of Irrigation Ditches and Waterways Evaluated for their Habitat Quality for Amphibians and Reptiles

- MP ~2 - aqueduct that runs north/south and crosses Larch Road ~0.1 mile west of junction with Corral Hollow Road. This aquatic feature is located on the Larch Road alternate route, but is also encountered if the preferred route is followed.
- MP ~2.3 – Ditch that contains aquatic vegetation on north side of Middle Road, adjacent to burrowing owl site. Disturbance and dewatering of this ditch should be avoided during construction.
- MP 3.0 - 4.0 - Ditch along north side of Middle Road and along the east side of San Jose Road. (ditches containing wetland vegetation)
- MP 4.7 - 5.0 - Ditch along south side of Grant Line Road. (ditches containing wetland vegetation)
- MP 6.8 - Dairy pond on southwestern corner of Mountain House Parkway and Grant Line Road. (potential habitat for California red-legged frog)
- MP 9.0 - Mountain House area (potential habitat for California red-legged frog and Western pond turtle)
- MP 11+ - Tesla Power Plant site (potential habitat for California red-legged frog and California tiger salamander)

From approximately MP 0.0 to MP 6.0, the proposed pipeline would traverse mostly agricultural land. Old River lies north of MP 0.0 through 4.0, however no CNDDB records of California red-legged frog exist along this area of the river (please refer to Appendix G (CEC 2003b)). There are irrigation/drainage canals at MP 2.0, 2.3, 3.0 to 4.0, and 4.7 to 5.0. Although these sections appear to be marginal red-legged frog

habitat, the canals located at the aforementioned mileage designations could potentially provide habitat for red-legged frogs. At MP 6.8, there is a wetland area adjacent to a dairy cattle operation. The wetland was not delineated, but it appeared that hydrophytic vegetation was present and water had been present for a sufficient period of time to support anaerobic conditions. It is staff's opinion that this area could provide habitat for the red-legged frog. From MP 8.0 to the proposed TPP, there are approximately 15 CNDDB records of red-legged frogs within five miles of the proposed reclaimed water pipeline route. There is also a CNDDB record for Western pond turtle approximately one mile north of MP 8.

It is staff's opinion that some aforementioned areas - listed in **Biological Resources Table 3** - could provide habitat for red-legged frog and western pond turtle. The likelihood of occurrence for California tiger salamander is lower; however staff has identified areas near MP 11.0 at the TPP site that contain potentially suitable habitat.

Burrowing owls (USFWS Migratory Non-game Bird of Management Concern, California Species of Special Concern) occupy burrows along the north side of Grant Line Road (MPs 1.8 and 2.2) along levees and ditches adjacent to alfalfa and ruderal areas. Burrowing owls were also found north of the power plant right-of-way along North Midway Road (between MP 10.0 and 11.0). This species was observed at several locations and may occur anywhere along the proposed pipeline route. Please see Appendix E for a map of the location of special-status species (CEC 2003b).

Swainson's hawks (California Threatened) were commonly observed along the proposed reclaimed waterline route. Activities observed include foraging in alfalfa and cut grain fields, soaring and exhibition of courtship displays, and nest selection and construction. There are numerous potential nest trees along the route. Generally these trees are located more than ¼-mile from the construction area. Mile posts 5.0 through 8.0 contained high densities of foraging raptors. In particular on April 9, 2003 at least 20 Swainson's hawks were observed perched in one field in addition to several red-tailed hawks, and two Northern harriers. Numerous nesting sites exist in the area but specific nest sites were not identified. The nest sites were greater than ½-mile from the area that would be impacted by construction of the pipeline.

Numerous special-status raptors and songbirds including the Loggerhead shrike (California Species of Special Concern), the White-tailed kite (California Fully Protected), and the Northern harrier (California Species of Special Concern) were each observed in several locations along the proposed pipeline route. Nesting habitat for all of these species exists in the vicinity of the proposed pipeline route. Northern harriers were regularly observed hunting and performing courtship displays in the agricultural fields along Grant Line Road between MP 5.0 and MP 6.0. This species as well as the short-eared owl (USFWS MNBMC, California Species of Special Concern), nest on the ground and if the pipeline is constructed across this agricultural field during the breeding season, these species would be vulnerable to take or disturbance. Short-eared owls were not detected during surveys but may inhabit the area year-round (Zeiner et al. 1990). Please see to Appendix E for a map of observed sensitive wildlife species (CEC 2003b).

IMPACTS

Criteria Used to Determine Significance of Impacts

In evaluating the significance of the environmental effect of a project, staff considers direct physical changes in the environment that may be caused by the project, as well as reasonably foreseeable indirect and cumulative physical changes in the environment. Staff bases the following determination of impacts to special-status species upon the risk of incidental take during construction activities, expected permanent and temporary removal of occupied habitat, especially designated critical habitat, and the possible disturbance of breeding, foraging, or migratory behaviors.

Direct Impacts

A direct physical change in the environment is caused by and immediately related to the project, such as construction of the pipeline. Other examples of direct physical changes in the environment are the dust, noise, and heavy equipment traffic that would result from construction of the pipeline. Habitat loss and incidental take of individual animals, plants, nests, or eggs would also be considered direct impacts.

Permanent Habitat Loss

Two pump stations would be required for the proposed pipeline, each of which would occupy an area of about 0.1 acres to accommodate parking, a wet well (underground sump), as well as pumping equipment housing. Staff anticipates that these facilities would cause permanent habitat loss of a total of 0.2 acres of ruderal and disturbed lands as well as temporary disturbance that would occur during construction. Staff concludes that the impacts of these pump houses would be less than significant with implementation of approved mitigation (see Condition of Certification **BIO-13**).

Temporary Habitat Disturbance

The majority of the proposed reclaimed water supply pipeline route follows existing paved roads in the City of Tracy and in rural San Joaquin and Alameda counties. Impacts would primarily be temporary. Staff anticipates that the vast majority of the 11-mile pipeline would be located within the road bed or road shoulder or within existing agricultural fields. No additional temporary or permanent access roads would be required. Once construction is complete, the surface and vegetation along the reclaimed water pipeline route would be restored to existing conditions.

Trenching would be used to install the pipeline along roads, roadsides, and agricultural fields, although other techniques such as jack and bore and horizontal directional drilling techniques (HDD) may be used as needed. The construction trench dimensions would be 5 feet wide by 6 feet deep (please refer to the **Executive Summary** section of this document). In total, the 11-mile reclaimed water pipeline would temporarily disturb approximately 66.7 acres of roadside habitat, assuming a 50 foot wide construction corridor (refer to the **Executive Summary** and **Soil and Water Resources** sections of this Addendum). A small proportion of these acres would be within agricultural fields. The proposed pipeline would not destroy or cause significant impacts to wetlands, riparian habitat, vernal pools, native plant communities, or open water. Because the habitat disturbance impacts would be temporary and within existing rights-of-way, which contain highly disturbed and degraded habitats, staff concludes that these impacts

would be less than significant with implementation of mitigation measures. The construction impacts in San Joaquin County may come under the purview of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan and may require habitat compensation.

At the Delta Mendota Canal and California Aqueduct crossings, the pipeline would be constructed using jack and bore or HDD. The risk of frac-out (a frac-out occurs when drilling lubricant, such as bentonite, is released from the drilling hole to the surface through fissures or cracks in the earth) under the Delta Mendota Canal and the California Aqueduct is low. Whether HDD or jack and bore techniques are selected CDFG must be consulted for any potential impacts requiring a Streambed Alteration Permit.

However, because construction activities would disturb vegetation and soil, construction may cause mortality and injury to biological resources and may also disrupt foraging, nesting, and survival of sensitive plant and animal species.

General impacts from construction which must be minimized or eliminated include:

- Dust and air pollution (refer to the **Air Quality** section of this Addendum);
- Erosion and water degradation (refer to the **Soil and Water Resources** section of this Addendum);
- Excess noise from machinery (refer to the **Noise and Vibration** section of this Addendum);
- Traffic (refer to the **Traffic and Transportation** section of this Addendum); and
- Resulting damage or mortality of sensitive biological resources.

The above impacts to special-status plants and animals could be potentially significant. However, such biological impacts can be mitigated to less than significant levels with staff's recommended mitigation measures which address impacts to air quality, soil and water resources, as well as additional traffic and noise created during construction.

Impacts to Special-Status Species

Incidental Take

Incidental take of special-status plant or animal species may occur during project construction. Risk of "incidental take" during construction for special-status species is highest for burrowing owl and amphibians that may burrow in the soil or inhabit water bodies. The risk of this impact can be lessened to less than significant levels with the implementation of impact avoidance and minimization measures, tailored to protect specific special-status species. Based upon the disturbed nature of the pipeline route and the anticipated implementation of mitigation measures, the impacts of the project due to take would be less than significant.

Water Discharge

The TPP would implement a Zero Liquid Discharge (ZLD) system and therefore would not discharge wastewater or cause direct or indirect biological impacts (refer to the **Soil**

and Water Resources section of this Addendum for more information). The use of the reclaimed water would decrease the current TWWTP discharge volume into the Old River. Presently, Old River maintains a critical minimal flow level of 340 cubic feet/second (CFS) (City of Tracy 2001). If the reclaimed water from the TWWTP is used for the TPP, an average of 4.6 and a maximum of 8.3 million gallons per day (mgd) would be siphoned off from the total amount that is currently being discharged. During worst case conditions, assuming a critically dry year (340 cubic feet per second (cfs)) and maximum withdrawal levels, the water discharge volume would be decreased by 3.8%, a level that is not considered significant and would therefore not be expected to impact sensitive biological resources (NMFS 2003). Special-status fish (listed in **Biological Resources Table 2**) that may inhabit or migrate through the Old River would not be significantly adversely impacted by decreased flows and aquatic species may benefit from the expected improvement in water quality of the discharge. Water quality within existing discharges and flows is expected to improve as a result of the decrease in discharge and the use of tertiary treatment (NMFS 2003). The **Soil and Water Resources** section of this Addendum contains an analysis of impacts to water resources and recommendations for implementation of Best Management Practices to protect waterways from pollution during construction.

Indirect Impacts

An indirect physical change is to be considered only if that change is not speculative, but a reasonably foreseeable impact which may be caused by the project. As discussed in the previous section, the construction of the pipeline and the proposed use of reclaimed water would not substantially harm existing and expected users of the water supply, would help improve water quality in the Old River, and would decrease the current discharge into the Old River by less than 4% under worst case conditions. Staff does not believe the construction and operation of the proposed reclaimed water pipeline would result in significant indirect impacts.

Cumulative Impacts

Cumulative impacts are defined as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” (California Environmental Quality Act Guidelines, Section 15355). A cumulative impact results from a combination of impacts associated with the proposed project, in addition to those resulting from separate projects in the region; these additional projects may be underway or may be planned in the future and must cause similar adverse impacts. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time.

There are numerous ongoing and planned construction activities in the project area. However, with incorporation of impact avoidance and minimization measures to protect biological resources, as well as possible habitat mitigation in San Joaquin County, staff believes that the pipeline would not contribute to significant cumulative habitat loss, habitat degradation, or other impacts to biological resources.

Impacts Determination

Potentially Significant Impacts

Staff assumes that the big tarplant may be present in the project area. In order to ensure less than significant impacts to this special status plant species, a survey for the big tarplant should be completed along the entire reclaimed water pipeline route, and within all project areas potentially impacted by construction. The big tarplant survey should be completed during the late summer and fall of 2003 in order to both detect the plant and not cause a substantial delay in the schedule. Energy Commission staff would be available to assist in the completion of the big tarplant survey.

If big tarplant is detected within areas impacted by construction of the pipeline and TPP, the applicant would be expected to avoid areas containing the big tarplant and/or implement mitigation measures to protect and re-establish the species. Staff concludes that the proposed water supply pipeline and associated power plant could significantly impact this sensitive plant species during construction. However, staff has determined that appropriate mitigation could be implemented based upon results of the big tarplant survey to ensure less than significant impacts to this sensitive plant. Conditions of certification **BIO-5** and **BIO-15** require the appropriate surveys and the incorporation of mitigation (if necessary) into the BRMIMP.

Staff assumes that the following species exist in the project area because suitable or potentially suitable habitat exists for these species. CNDDB records and survey observations may also provide information on the likely locations for these species. Because the construction route lies within roadways and roadsides, staff finds that the proposed route would not cause permanent or significant loss of habitats used by the wildlife species listed below. However, all of the following species could be significantly impacted by construction activities that could result in “incidental take”, disturbance of occupied habitats, and disruption of breeding activities:

- Burrowing owl
- San Joaquin kit fox
- California red-legged frog
- California tiger salamander
- Western pond turtle
- Swainson’s hawk
- White-tailed kite
- Northern harrier
- Loggerhead shrike

Burrowing owl may be significantly impacted due to “incidental take” and habitat disturbance because this species was observed on numerous occasions along the proposed route. The project would not cause significant permanent habitat loss for the burrowing owl but may cause disturbance of nests, behavior, and cause “take” during construction. With implementation of approved mitigation and required biological

permits, staff has determined that impacts can be mitigated to less than significant levels (see **BIO-7**, **-8**, **-9**, **-10**, and **-13**).

San Joaquin kit fox, California red-legged frog, or California tiger salamander, are assumed present in the area despite not being detected during biological surveys. Potentially significant impacts may be avoided and minimized to less than significant levels with implementation of avoidance and minimization measures and location of the construction area within existing streets and roadsides (see **BIO-12** and **BIO-14**).

Swainson's hawks and white-tailed kites nest and forage in the project area. These species nest in trees and could be disturbed if nest sites were in close proximity to the construction area. Staff believes that the level of disturbance to these sensitive species can be mitigated to less than significant levels with pre-construction surveys, avoidance of trees, and the timing of construction activities.

The northern harrier, a ground nesting species commonly observed in the area, is vulnerable to ground disturbance and may be impacted if a nest is located near the edge of a field adjacent to the construction zone. Loggerhead shrikes nest in shrubs and small trees within the project area. Avoidance of tree and shrub removal as much as possible and avoiding disturbance of active nest sites would protect this species from potentially significant impacts.

Potentially suitable habitats (e.g., wetlands) and nest sites or breeding sites can be avoided during installation of the proposed pipeline. The proposed pipeline route would not impact wetlands and would not require removal of trees that may be used for nesting by special-status bird species such as the Swainson's hawk and the white-tailed kite.

Less Than Significant Impacts

Staff does not expect significant impacts to the following wildlife species due to a lack of suitable habitat and/or avoidance of impacts to occupied habitat. However, precautions should be taken during construction to avoid impacts to these species.

Special-Status Insects - There are several special-status insect species such as the valley elderberry longhorn beetle (federally listed as a threatened species) which relies on the elderberry (*Sambucus canadensis*) for its entire life cycle, however, there are no elderberry bushes on the project site or area. The curved-footed hygrotus diving beetle is a state species of special concern and the molestan blister beetle is a federal species of special concern; both of these species inhabit vernal pools and wetlands. There are no records of these species in the project area and suitable habitat does not exist along the proposed pipeline route.

Upland gamebirds and fur-bearing animals - Gamebird species such as ring-necked pheasant (*Phasianus colchicus*, non-native), wild turkey (*Meleagris gallopavo*, non-native), and California quail (*Callipepla californica*) may be present in the proposed project area. A long-tailed weasel (*Mustela frenata*), and red fox (*Vulpes fulva*, non-native) were also observed along the pipeline route. Populations of these species are not known to be imperiled in the project area. Construction of proposed pipeline route

would not be expected to result in significant impacts to nests, dens, cover, or foraging areas of these species.

Bats - The seven bat species that may inhabit the project region would not be impacted by the project. Nesting/roosting and foraging habitats would not be disturbed by construction of the pipeline.

Special-status delta fish - The California Delta is critical habitat for many declining or endangered fish species, such as winter run chinook, delta smelt, and Sacramento splittail (NMFS 2002). The installation of the reclaimed water pipeline would not disturb the habitat for any of these protected fish species or result in take of individuals. The National Marine Fisheries Service (NMFS) has provided comments on the FSA (CEC 2003) and a letter of support regarding implementation of reclaimed water for cooling both in terms of improving water quality and not impacting protected fish species or their habitat (NMFS 2003).

MITIGATION

Habitat Compensation

The temporary and permanent impacts that would occur within Alameda County would be included within the applicant's existing habitat compensation proposal that was accepted by staff, USFWS, and CDFG (CEC 2003, and see Condition of Certification **BIO-13** provided in this analysis).

If deemed necessary by the U.S. Fish and Wildlife Service, the temporary and permanent disturbance caused by pipeline construction within San Joaquin County may be mitigated under the auspices of the SJMSCP (Park 2003). A detail map illustrating the route of the pipeline would need to be submitted in order to evaluate the areas where habitat fees may be required. The typical habitat compensation fee of $1,690 per acre was identified by Gerald Park, Senior Regional Planner for the SJCOG. However, Mr. Park also indicated that if the pipeline is installed within an existing paved road, then the acreage impact fee may not apply.

Staff recommends implementation of Condition of Certification **BIO-16** in order to ensure compliance with the SJMSCP in addition to the following changes to Condition of Certification **BIO-13** to reflect any needed additional habitat mitigation such as indicated below.

> "If habitat mitigation is required for impacts in San Joaquin County, the Project Owner shall provide funds to the SJCOG as required in compliance with the SJMSCP. "

The following **Verification** should also be added to Condition of Certification **BIO-13**:

> "If additional habitat compensation is required under the SJMSCP, the Project Owner shall provide to the CPM for approval written confirmation, at least 90 days prior to site mobilization, that all required habitat compensation has been purchased and provided to the SJCOG;"

Standard Mitigation Measures

The following mitigation measures are recommended to prevent impacts to the biological resources during construction of the reclaimed water pipeline. These measures are already contained in the FSA and apply to construction of the entire TPP project (CEC 2003; FPL 2001a, section 5.3.6; FPL 2002b, Addendum pages 4-5; FWEC 2002a, pages 16-18):

- Hiring of a Designated Biologist and Biological Monitors (see Conditions of Certification **BIO-1**, **BIO-2**, and **BIO-3**);
- Implementation of Worker Environmental Awareness Program (WEAP) (see Condition of Certification **BIO-4**);
- Compliance with USFWS and CDFG permit requirements (see Conditions of Certification **BIO-7**, **BIO-8**, **BIO-9**, and **BIO-10,** if applicable);
- Preparation of a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) (see Condition of Certification **BIO-5**);
- Condition of Certification **BIO-6** refers to facility closure and would also apply to the reclaimed water pipeline;
- Implementation of construction and operation mitigation measures (see Conditions of Certification **BIO-11** and **BIO-12**). Because there are sensitive resources particular to this pipeline route, staff proposes the following items be added to **BIO-12**:

  39. Avoid removal of walnut trees on Grant Line Road and other large trees along the route during construction of the reclaimed water supply line;

  40. Avoid disturbances to irrigation ditches or canals by employing appropriate construction technology such as horizontal directional drilling or jack and bore techniques, or by trenching only when the water body is dry;

  41. Place the tailings or soil removed during digging of the trench in a CPM pre-approved location that will not adversely impact biological resources.

  42. Implement mitigation measures recommended by the SJCOG/SJMSCP.

BRMIMP Update

The applicant provided a draft BRMIMP in December 2002 (FWEC 2002b). This BRMIMP would need to be amended to reflect resource concerns associated with construction of this pipeline. Measures would be developed in order to avoid and minimize adverse impacts to all special-status plant and wildlife species and sensitive habitats. Measures identified in this section would be included in the approved BRMIMP (Condition of Certification **BIO-5)**.

Staff recommends addition of the following to Condition of Certification **BIO-5** requiring that results of the big tarplant field surveys and required mitigated are included in the BRMIMP:

19. Results of the big tarplant field survey and recommended mitigation, if necessary.

Worker Training

The worker training program would specifically train pipeline construction personnel on how to identify special status habitats and species, and how to avoid impacting them.

Special Status Species Mitigation Measures

Condition of Certification **BIO-12** establishes mitigation measures designed to protect special-status species. These measures would also apply to the construction of the reclaimed water supply pipeline.

Big Tarplant

Because this species is assumed present in the project area, big tarplant surveys would need to be completed in the late summer and fall of 2003 along the reclaimed water pipeline route and on the TPP project site. Staff proposes the addition of Condition of Certification **BIO-15** which requires completion of big tarplant surveys, the results of which would be included in the BRMIMP. If big tarplant is found along the proposed reclaimed water supply pipeline or within any area to be disturbed by project construction, appropriate steps would be taken to avoid impacts to the individual plants. If impacts are unavoidable, the applicant would be required to:

1. Collect seeds from the big plant(s);
2. Reseed the area(s) impacted with the big tarplant seeds; and
3. Implement monitoring and maintenance of the affected area(s) using success criteria contained in the final approved BRMIMP.

Implementation of impact avoidance and minimization measures would ensure that adverse impacts to big tarplant found along the pipeline route and all TPP project areas would be mitigated to less than significant levels.

Swainson's Hawk

Unlike the TPP project site, which does not contain nest habitat, the proposed reclaimed water pipeline construction would traverse areas occupied by nesting Swainson's hawks. Construction work should be timed to avoid nesting and/or nests per recommendations of the Swainson's Hawk Technical Advisory Committee (SHTAC) (SHTAC 2000). Large trees should not be removed during construction and activities near any nesting trees should be evaluated and limited per SHTAC guidelines (2000) and CDFG recommendations.

Burrowing Owl

The applicant has proposed and Energy Commission staff has accepted mitigation that would prevent and minimize impacts to burrowing owls per Burrowing Owl Mitigation Guidelines formulated by the Burrowing Owl Consortium (1993). These practices would also apply to construction of the reclaimed water pipeline (also contained in CEC 2003 and FWEC 2002b).

General mitigation measures include:

- Preconstruction surveys will be conducted within 30 days prior to initial ground-disturbing activities;
- No construction is allowed in known occupied burrowing owl habitat during the breeding season (February 1 to August 31);
- If construction is unavoidable during the breeding season, or resident owls are present, owls must be moved away from the disturbance area using passive relocation methods prior to the breeding season. This means that the owls will be encouraged to relocate to alternate natural or artificial burrows that are beyond 50-meters from the impact zone and contiguous to a minimum of 6.5-acres of foraging habitat for each pair of relocated owls. Owls will be excluded from burrows in the immediate impact zone and within a 50-meter buffer zone by installing one-way doors in burrow entrances. Doors will be left in place for a minimum of 48-hours to insure that owls have left the burrow before excavation. The project area will be monitored for one-week after the relocation of owls to confirm owl use of alternative burrows before excavating burrows in the immediate impact zone. Relocation will occur in the non-breeding season, and owls will be given at least one week to move and acclimate to new burrows; and
- Replacement of habitat may be required at a 1:1 ratio based upon the level of disturbance to nesting burrowing owls per CDFG recommendations.

San Joaquin Kit Fox

The applicant has also previously proposed mitigation for impacts to San Joaquin kit fox (FPL 2001, page 5.3-42; FWEC 2002, data request response 34, page 18), including development and implementation of a San Joaquin kit fox mitigation and monitoring program that will include the following:

- Pre-construction survey of occupied and natal dens of the project area.
- On-site biological monitor during all construction activities.

Loggerhead Shrike, White-tailed Kite, Northern Harrier

For these species and other special-status bird species, including other raptors, owls, and songbirds; pre-construction surveys; and avoidance of nests, adults, and young during the breeding season, would be required.

Amphibians and Reptiles

It is staff's opinion that potential impacts to the California red-legged frog, California tiger salamander, and the Western pond turtle can be mitigated by avoidance measures. Pre-construction surveys would need to be conducted along the proposed pipeline route. In addition, to avoid potential impacts to potential red-legged frog, tiger salamander, and western pond turtle habitat, staff recommends jack and bore or horizontal directional drilling to route the pipeline beneath ditches and canals (where ditches run perpendicular to proposed pipeline). Where ditches run parallel to the proposed pipeline, erosion control measures would need to be employed. Potential impacts to the wetland area at the junction of Mountain House Parkway and Grant Line Road could be avoided by constructing the pipeline on the north side of Grant Line

Road. By conducting pre-construction surveys, and routing the proposed pipeline beneath existing roads and canals, potential impacts to red-legged frogs, tiger salamander, and western pond turtles can likely be avoided.

California Red-legged Frog, California Tiger Salamander, Western Pond Turtle

The applicant has proposed the following mitigation measures for red-legged frog, tiger salamander, and western pond turtle (FPL 2001, page 5.3-43):

1. Consultation with USFWS and CDFG to determine the necessary pre-construction surveys in the project area; and
2. On-site biological monitoring during all construction activities.

COMPLIANCE WITH LORS

To be in compliance with applicable laws, ordinances, regulations and standards for the reclaimed water pipeline, the applicant must complete all of the following permit processes:

1. A Section 7 consultation and resulting Biological Opinion from the USFWS;
2. A letter of consultation with the NMFS regarding impacts to special status fish;
3. A Consistency Determination and/or take permit from CDFG; and
4. As required, a CDFG Streambed Alteration Agreement.

These documents will identify if additional mitigation measures are required by each of the regulatory agencies. For further information on these documents, refer to Conditions of Certification **BIO-7**, **BIO-8**, **BIO-9**, and **BIO-10** contained in the FSA (CEC 2003).

To help the Project Owner comply with laws, ordinances, regulations, and standards and the biological resource mitigation measures associated with this project, the Project Owner shall designate a biological resource specialist (the Designated Biologist), prior to the beginning of any project-related ground disturbance. The Designated Biologist shall be familiar with the biological resource issues of the project area (see Condition of Certification **BIO-1** in the FSA (CEC 2003). The Designated Biologist would help the Project Owner make certain that all mitigation measures are complied with during project construction and operation. For details about the roles and responsibilities of the Designated Biologist, refer to the FSA Conditions of Certification **BIO-2**, **BIO-3**, and **BIO-4** (CEC 2003).

Coordination with other Agencies

Contact and coordination with the USFWS and CDFG has been ongoing for the TPP and the reclaimed water pipeline (**Biological Resources Table 4**). The listed agencies have been contacted to receive their input regarding this proposal. Although the required agency consultations have not been completed, the following permits would be expected to be completed and/or amended in order to ensure compliance with LORS.

Biological Resources Table 4
Summary of Regulatory Agencies and Biological Permits

Agency	Contact	Permit/Approval
U.S. Fish and Wildlife Service	Susan Jones, San Joaquin Valley Branch Chief, (916) 414-6631	Jurisdiction over Federally listed plant and wildlife species Biological Opinion (Section 7 permit) Section 10 Permit under Habitat Conservation Plans
California Department of Fish and Game	Janice Gan, Environmental Scientist, (209) 482-0481	Jurisdiction over State listed plant and wildlife species Streambed Alteration Agreement (1603 permit) 2081(b) Take Permit or Consistency Determination
National Marine Fisheries Service	Jeffrey Stuart (916) 930-3607	Impacts to Special Status Fish and Marine Mammals Protected under the Magnuson Fishery Conservation Act, Section 7 Consultation for Federally Endangered Fish and Marine Mammals, Designated Evolutionary Significant Units and Essential Fish Habitat
San Joaquin Council of Governments	Gerald Park Senior Regional Planner San Joaquin Council of Governments 6 S. El Dorado, Ste. 400 Stockton, CA 95202 (209) 468-3913	Compliance with the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

USFWS Section 7 Biological Opinion

Formal Section 7 consultation for the proposed TPP has been initiated by the U.S. Environmental Protection Agency with the USFWS (USEPA 2001). This consultation was based upon the applicant's proposal to cool the facility with groundwater obtained from Kern County. Of major concern to the USFWS are potential impacts to the Endangered Buena Vista Lake shrew (*Sorex ornatus relictus*) in Kern County. Please refer to the FSA (CEC 2003) for a discussion of the biological issues and water supply issues. Preparation of the Biological Opinion by the USFWS is pending, although a completion date has not been confirmed. In large part, preparation of the Biological Opinion has been prolonged due evaluation of impacts to the Buena Vista Lake shrew in Kern County. USFWS concerns regarding the Buena Vista Lake shrew would be eliminated if reclaimed water was used.

The USFWS has expressed support for the implementation of reclaimed water as an alternative to using groundwater from Kern County (Jones 2003). Staff's understanding is that completion of the Biological Opinion would not be delayed substantially and may actually be expedited if the project incorporated the use of reclaimed water.

CDFG Permits

The Project Owner would need to include the reclaimed water pipeline route within the application for an incidental take permit or a Consistency Determination from CDFG. A Streambed Alteration Agreement may also be required. Staff received an email and

phone call from CDFG expressing support for the pipeline route as well as a preference for the use of reclaimed water for the proposed TPP (Gan 2003a; Gan 2003b).

The applicant is in the process of obtaining the above permits, however, adoption of the use of reclaimed water and the reclaimed water pipeline would require amendment of the current permit applications.

National Marine Fisheries Service

The pipeline would not require a permit from the NMFS, but the NMFS would provide comments and guidance as required to protect special-status fish in the project region. The NMFS has reviewed the propose pipeline and provided a letter of support to the Energy Commission as discussed in the Impacts section of this analysis (NMFS 2003).

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

The SJMSCP plan addresses long-term habitat management for 97 species including the San Joaquin kit fox, Swainson's hawk, and burrowing owl in San Joaquin County. Within the San Joaquin County portion of the proposed pipeline (MP 0.0 to 8.0), the Project Owner would need to consult with the San Joaquin Council of Governments (SJCOG) in order to determine the need for submittal of habitat mitigation funds, and the implement take avoidance measures during project construction.

At this time the need for habitat mitigation within the SJMSCP has not been determined but rather stated as a possibility. Gerald Park, senior regional planner, of the San Joaquin Council of Governments (SJCOG) has provided guidance and feedback regarding the reclaimed water supply pipeline and the procedure and general cost for any needed mitigation if deemed necessary. Participation within the SJMSCP process would not create substantial delays in the project schedule.

CONCLUSIONS AND RECOMMENDATIONS

The installation of an approximately 11-mile reclaimed water supply pipeline between the proposed TPP and the TWWTP may cause temporary impacts to biological resources and permanent impacts to approximately 0.2 acres of disturbed habitat. The pipeline route would be installed in existing paved roads or roadsides, with short segments traversing agricultural fields. The pipeline route would avoid adverse impacts to existing large trees and potential nest sites by avoiding them.

No special-status plants were found along the route and the vegetation and habitats within the area of impact are largely ruderal or agricultural. However, a big tarplant survey needs to be completed in the late summer and fall of 2003 to determine species presence and whether mitigation is necessary. If big tarplant is detected on the pipeline route or on the TPP site, mitigation would be required including avoidance of individual plants or seed collection and reseeding of disturbed areas following completion of construction. Staff concludes that the potentially adverse impacts to big tarplant would be less than significant upon completion of the big tarplant survey and the implementation of mitigation measures (if necessary) (see **BIO-15**).

Burrowing owls, in particular, may nest within areas that may be impacted by the construction of the water supply pipeline. With careful mitigation, adverse impacts may be avoided or minimized. San Joaquin kit fox, California red-legged frog, California tiger salamander, and Western pond turtle are assumed to inhabit the area and could potentially be impacted where suitable habitat exists. However, staff believes that these potential habitat areas can be avoided and protected from construction impacts. Swainson's hawk nest in trees near the proposed pipeline route, but no trees or nest trees would need to be removed, nor would foraging habitat be permanently disturbed or eliminated. Impacts to other raptors observed in the project area (i.e. Northern harrier and white-tailed kite) would be less than significant because occupied habitat can be avoided. Riparian, wetland, and open water habitats would not be impacted by construction of the pipeline. Finally, the USFWS (Jones 2003), NMFS (NMFS 2003), and CDFG (Gan 2003a; Gan 2003b) have expressed support for the use of the reclaimed water for cooling the TPP and for construction of the proposed reclaimed water pipeline route.

In summary the avoidance of nest sites, timing of construction outside sensitive seasons, and implementation of specific biological mitigation measures contained in the Conditions of Certification and biological permits issued by CDFG and USFWS, would ensure that impacts to biological resources are less than significant. Staff recommends adoption of the proposed reclaimed water supply pipeline with incorporation of staff's modified Conditions of Certification.

PROPOSED CONDITIONS OF CERTIFICATION

All of staff's proposed Conditions of Certification contained in the FSA (CEC 2003) would apply to this reclaimed water pipeline. In addition, staff proposes modifications to Conditions of Certification **BIO-5**, **BIO-12,** and **BIO-13** in order to account for particular biological resources or impacts unique to the reclaimed water supply pipeline. The proposed condition modifications are shown as ~~strikeout~~ (for deleted text) or <u>underlined</u> (if new text).

Staff proposes two new Conditions of Certification. **BIO-15** requires completion of big tarplant surveys and implementation of mitigation measures should the plant species be detected. **BIO-16** would ensure compliance with the San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJMSCP).

Staff has also proposed modification to **BIO-12, # 20**. Staff recommends deletion of the requirement for large flowered fiddleneck (*Amsinckia grandiflora)* surveys. Staff completed surveys at the appropriate time of year on the TPP site and along the proposed pipeline route and did not detect this federal and state endangered species in the project area. Therefore, staff concludes that additional field surveys for large flowered fiddleneck are no longer necessary.

These amendments and additional mitigation measures would prevent significant biological impacts to biological resources due to construction of the proposed reclaimed water supply pipeline.

Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)

BIO-5 The Project Owner shall submit to the CPM for review and approval a copy of the BRMIMP and shall implement the measures identified in the approved BRMIMP. Any changes to the approved BRMIMP must also be approved by the CPM in consultation with CDFG, the USFWS and appropriate agencies to insure no conflicts exist.

The final BRMIMP shall identify:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the Project Owner;
2. All Biological Resource Conditions of Certification identified in the Commission's Final Decision;
3. All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion ;
4. All biological resources mitigation, monitoring and compliance measures required in other state agency terms and conditions, such as those provided in the CDFG Take Permit and Streambed Alteration Agreement and ACOE permits;
5. All biological resources mitigation, monitoring and compliance measures required in local agency permits, such as site grading and landscaping requirements;
6. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;
7. All required mitigation measures for each sensitive biological resource;
8. Required habitat compensation strategy, including provisions for acquisition, enhancement, and management for any temporary and permanent loss of sensitive biological resources;
9. A detailed description of measures that will be taken to avoid or mitigate temporary disturbances from construction activities;
10. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
11. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities - one set collected prior to any site or related facilities mobilization disturbance and one set collected subsequent to completion of mitigation measures. Include planned timing of aerial photography and a description of why times were chosen;
12. Duration for each type of monitoring and a description of monitoring methodologies and frequency;

13. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
14. All performance standards and remedial measures to be implemented if performance standards are not met;
15. A discussion of biological resources related facility closure measures;
16. A description of the third party habitat management entity, a copy of the habitat management plan, and a copy of the contract between the Applicant and that third party;
17. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval;
18. A copy of all biological resources obtained permits; and
19. Results of the big tarplant field survey and recommended mitigation, if necessary.

Verification: At least 60 days prior to start of any site or related facility mobilization activities, the Project Owner shall provide the CPM with two copies of the BRMIMP for this project, and provide copies to the CDFG and the USFWS.

The CPM, in consultation with the CDFG, the USFWS and any other appropriate agencies, will determine the BRMIMP's acceptability within 45 days of receipt.

The Project Owner shall notify the CPM no less than 5 working days before implementing any modifications to the approved BRMIMP to obtain CPM approval.

Within 30 days after completion of project construction, the Project Owner shall provide to the CPM, for review and approval, a written report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which mitigation and monitoring items are still outstanding.

If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to the CPM, USFWS, and CDFG as addendum to the BRMIMP within 10 days of their receipt.

Construction Mitigation Management to Avoid Harassment or Harm

BIO-12 The Project Owner shall manage their construction site and related facilities in a manner to avoid or minimize impacts to the local biological resources.

The Project Owner shall be required to comply with the following measures:

1. Appropriate avoidance and minimization measures will be in place before site mobilization of a particular area, or activity that may impact sensitive biological resources;
2. Clearly mark construction area boundaries with stakes, flagging, silt fencing, and/or rope or cord to minimize inadvertent degradation or loss of adjacent habitat during facility construction/modernization;

3. All equipment storage will be restricted to designated construction zones or areas that are currently not habitat for special status species;
4. Enforce a speed limit of 20 miles/hour at all project locations including the construction access road;
5. Traffic is restricted to existing roads, designated access roads, construction storage and staging areas, and parking areas;
6. Daytime construction at all drainages and drains to avoid impacts to special status reptiles, amphibians, and mammals;
7. There will be temporary fencing and wildlife escape ramps for construction areas that contain steep walled holes, or trenches if outside of an approved, permanent exclusionary fence. The temporary fence will be hardware cloth or similar materials that are approved by USFWS and CDFG;
8. Open trenches in active construction areas shall be inspected for wildlife each morning prior to start of daily construction activities. Within active construction areas, inspect all construction pipes, culverts, or similar structures with a diameter of 4-inches or greater for sensitive species (such as kit foxes) prior to pipe burial. Any wildlife observed shall be allowed to escape on its own if possible prior to commencement of construction. Otherwise, the Designated Biologist shall contact the appropriate agency for assistance;
9. Pipes to be left in trenches overnight will be capped;
10. Use of rodenticides will be prohibited unless pre-approved and authorized in writing by the USFWS in consultation with the CPM so that the pesticide is enclosed or otherwise protect kit fox, birds of prey, and other non-target species from becoming inadvertently poisoned. Monitoring and reporting of use will be required in monthly status reports and annual management reports;
11. Immediate removal of hazardous debris and waste on-site and along linears;
12. Implementation of an erosion prevention and control (see **Soil and Water Resources** section) on-site, at the construction laydown area, and along linears;
13. Implement dust control measures during construction and operation;
14. Implementation of shielded, down-facing lighting to protect environmentally sensitive habitats from nighttime lighting;
15. All food-related trash will be disposed of in closed containers and removed at least once a week. Feeding of wildlife shall be prohibited;
16. Prohibit non-security related firearms or weapons from being brought to the site;
17. Prohibit pets from being brought to the site;
18. Report all inadvertent deaths of sensitive species to the appropriate project representative. Injured animals will be immediately reported to CDFG and USFWS, and the Project Owner will follow instructions that are provided by CDFG and USFWS;

19. Revegetate and maintain all linears, construction, staging, temporary parking, and equipment storage areas with CPM-approved plant species;
20. Conduct pre-construction surveys for special-status plant and animals according to USFWS, and CDFG survey requirements and recommendations, and in consultation with the CEC. ~~Surveys should provide confirmation that *A. grandiflora* is not present on-site or impacted by project actions.~~ Survey methodology shall be provided in the BRMIMP. All surveys shall be conducted and reported to the USFWS, CDFG, and CPM for review prior to any site mobilization;
21. Pre-construction surveys will be implemented for the San Joaquin kit fox in compliance with all measures established in the USFWS Biological Opinion;
22. Pre-construction surveys will be implemented for California tiger salamander on the TPP site, along linears, and the construction laydown area (as required by the USFWS);
23. Pre-construction surveys will be implemented for burrowing owl on the TPP site, along linears, and the construction laydown area, followed by avoidance or passive relocation, if owls are observed;
24. Avoid sensitive habitats and species during construction by developing construction exclusion zones and silt fencing around sensitive areas;
25. Specific avoidance and minimization measures have been proposed and will be implemented for special status species;
26. The Project Owner will implement the construction practices and mitigation measures as outlined in Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1999);
27. San Joaquin kit fox dens and burrowing owl burrows shall be temporarily flagged to establish a visible buffer/avoidance zone. This zone will be monitored by the Designated Biologist during construction;
28. Restrict construction within all drainages, excluding Horizontal Directional Drilling (HDD), to daylight hours in order to avoid impacts to special status reptiles, amphibians, and mammals;
29. Construction of transmission lines and pipelines will be limited to daylight hours;
30. Transmission line poles, access roads, pulling sites, and storage and parking areas will be sited to avoid impacts to sensitive resources;
31. Transmission lines and poles will be designed to reduce risk of electrocution for large birds;
32. To prevent entrapment of listed species, or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will either be covered at the close of each working day, or covered to prevent animal entry into trench, or provided with one or more escape ramps (3:1) constructed of earth fill or wooden planks. For all open trenches, an escape ramp will be constructed at a minimum of every 0.25-mile;

33. Setbacks and buffers will be established for the protection of special-status wildlife species. Distances will be determined through consultation with the USFWS and CDFG prior to construction;
34. The temporary construction laydown area (49-acres) would be restored as soon as feasible after construction is completed and is proposed as part of the habitat compensation lands and/or managed as grazing land, similar to its current use;
35. Areas to be impacted by transmission line construction will be surveyed within 30 days prior to ground disturbance. Construction of the main transmission line will be conducted when Patterson Run Creek is dry. The transmission line will be hand pulled across the creek to avoid impacts of machinery, and the permanent transmission towers will be located at least 30 feet from the defined bed of Patterson Run Creek;
36. Ravenswood transmission line construction will entail the use of an "H" wood pole structure so that the conductor can be strung across the creek without entering or disturbing the riparian habitat;
37. Pre-construction surveys will be implemented for raptor nests and all sensitive and special status species of animals and plants that are potentially on the project site, along linears, and at the construction laydown area within 14 days prior to commencement of any construction activities;
38. A monitoring program for avian electrocution and collisions will be implemented following start of facility operation for a duration of 12 months from the start date to determine if mitigation, such as the installation of bird-flight diverters, is necessary. The monitoring plan will be included in the BRMIMP and developed in consultation with the USFWS and CDFG. Monitoring will include bird collisions with stacks and other tall building facilities;
39. Avoid removal of walnut trees on Grant Line Road and other large trees along the route during construction of the reclaimed water supply line;
40. Avoid disturbances to irrigation ditches or canals by employing appropriate construction technology such as horizontal directional drilling or jack and bore techniques, or by trenching only when the water body is dry;
41. Place the tailings or soil removed during digging of the trench in a CPM pre-approved location that will not adversely impact biological resources; and
42. Implement mitigation measures recommended by the SJCOG/ SJMSCP.

Verification: All mitigation measures and their implementation methods will be included in the BRMIMP. The Project Owner shall provide a post-construction compliance report, within 45 calendar days of completion of the project, to the Energy Commission CPM.

Habitat Compensation

BIO-13 Prior to the start of site mobilization for the project and any related facilities, the Project Owner shall:

1. Provide evidence that the lands listed in the **Table BIO-13** below have been purchased and placed under permanent conservation easements to mitigate for impacts to the habitat of the San Joaquin kit fox, burrowing owl, and all other special status species;

Table BIO-13
Required Habitat Compensation for the Tesla Power Project

Parcel Acreage to be placed under Conservation Easement	**Parcel Location**
320 Castello Property	Grassland parcel west and northwest of project site
25.8	Grassland within the 60-acre project site
99.97	Grassland north of project site
19.7	Grassland and riparian habitat
Total 465.47 acres under Conservation Easement	

2. Provide a Property Assessment Report (PAR) analysis for establishment of an endowment to provide for the long-term management of the habitat lands;

3. A Habitat Management Plan for all mitigation lands shall be implemented that includes management and monitoring that protects and enhances habitat for species such as San Joaquin kit fox, burrowing owl, California tiger salamander, and all other special status species potentially impacted by the project;

4. Provide the endowment funds to the approved third party management organization;

5. Within the 49.53-acre construction laydown parcel, 19.7 acres shall be placed under conservation easement. In addition, as much of the 29.83 acre laydown area as possible shall be returned to its pre-use condition and protected as open space and wildlife habitat; and

6. If the Project Owner causes impacts to additional acres of habitat during construction or operation of the project they shall be required to mitigate for those impacts with additional habitat compensation, at a ratio of 3:1 for permanent impacts and 1:1 for temporary impacts, at the Haera mitigation bank or other location to be approved by the CPM in consultation with the USFWS and CDFG. <u>If habitat mitigation is required for impacts in San Joaquin County that are related to the reclaimed water supply pipeline, the Project Owner shall provide funds to the SJCOG as required to be in compliance with the SJMSCP (see **BIO-16**).</u>

Verification: 1.At least 90 days prior to site mobilization, the Project Owner shall provide documentation confirming that the a) land purchases, and b) implementation of conservation easements for all mitigation parcels have been completed. The conservation easement on the mitigation parcels shall be reviewed and approved by the CPM in consultation with the USFWS and CDFG and will remain in effect in perpetuity;

1. Upon completion of the acquisition and transfer, if applicable, of all habitat lands to the approved recipient(s) for management, the Project Owner shall provide the CPM with copies of all title transfer records (including county parcel numbers) and conservation easement contracts or records verifying other approved transactions;
2. At least 90 days prior to site mobilization, the Project Owner shall provide the Final Habitat Management Plan (HMP) for all mitigation lands to the CPM for review and approval in consultation with the USFWS, CDFG, and the third party resource management entity. The HMP will become part of the BRMIMP and may include elements of the Haera Mitigation Bank Management Plan. The HMP shall implemented at least one day prior to the start of site mobilization;
3. At least 90 days prior to site mobilization, the Project Owner shall provide to the CPM for approval, the name of the third party management entity, and written verification that the appropriate endowment fund (determined by the PAR analysis) has been received by the approved third party management entity. Selection of the third party management agency and management procedures for the conservation easement lands must be approved by the CPM in consultation with the USFWS, and CDFG;
4. If additional habitat compensation is required under the SJMSCP, the Project Owner shall provide to the CPM for approval written confirmation, at least 90 days prior to site mobilization, that all required habitat compensation has been provided to the SJCOG;
5. Each month, the Project Owner shall provide information on additional planned or unplanned impacts to habitats that will be permanently or temporarily impacted by the project. The Project Owner shall provide written information at least 30 days prior to incurring the impacts for planned impacts and within 30 days of incurring unplanned impacts provide a written summary of the impacts;
6. Each month, the Designated Biologist shall prepare, as part of the monthly compliance report, a detailed description and evaluation of any additional habitat impacts. The report shall include appropriately scaled and detailed maps, the number of acres to be impacted or already impacted, the types of habitat(s) impacted and all impacts to special status species; and
7. Within 30 days of the completion of construction, the Project Owner shall submit a final report on all additional acres impacted, if any. In this report, the Project Owner shall provide evidence of consultation with the CPM, USFWS, and CDFG to confirm the location and acreage of habitat compensation to be provided at the approved mitigation ratio. If no additional habitat acres are impacted, no additional habitat mitigation shall be required.

Pre-construction Surveys for Big Tarplant

BIO-15 The Project Owner shall conduct a big tarplant survey along the reclaimed water supply route as well as all TPP project areas that may be impacted by

construction. The survey shall be conducted by a suitably trained botanist during the proper time of year (late summer and early fall) to ensure proper identification. Approved mitigation measures shall be included in the TPP BRMIMP.

If big tarplant is found along the proposed reclaimed water supply pipeline or within any area to be disturbed by project construction, appropriate steps would be taken to avoid impacts to the individual plants. If impacts are unavoidable, the applicant would be required to provide mitigation, that includes consider of:

1. Collect seeds from the big plant(s);
2. Reseed the area(s) impacted with the big tarplant seeds; and
3. Implement monitoring and maintenance of the affected area(s) using success criteria contained in the final approved BRMIMP.

Verification: The Project Owner shall provide the final results of big tarplant surveys to the CPM within 30 days of completion of the surveys. The Project Owner shall include approved mitigation for detected plants within the final BRMIMP (see Condition of Certification **BIO-5**).

Compliance with the San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJMSCP)

BIO-16 The Project Owner must provide written verification to the CPM that the project is in compliance with the SJMSCP prior to the start of any project-related construction activities.

Verification: No fewer than 60 days prior to any project-related site mobilization activities, the Project Owner must provide written verification to the CPM that the project has provided the required habitat compensation for the Tesla Power Project to the San Joaquin Council of Governments. In addition, all take avoidance measures required by the Council of Governments as part of the SJMSCP approval must be included in the final BRMIMP (see Condition of Certification **BIO-5**).

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CULTURAL RESOURCES

Testimony of John Dougherty, Mary Maniery, and Gary Reineohl

INTRODUCTION

The purpose of this analysis is to evaluate potential impacts to cultural resources that would be caused by the staff proposed Reclaimed Water Supply Pipeline for the Tesla Power Project (TPP).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

For a discussion of the LORS which apply to this project, please refer to the Final Staff Assessment (FSA).

ANALYSIS

The project setting is the southern margin of the Sacramento – San Joaquin river delta and the adjacent eastern foothills of the Coast Ranges of California in western San Joaquin and eastern Alameda counties. The landscape ranges from open, near-level grassland to rolling, grass covered hills. Elevation varies from less than five feet above mean sea level (amsl) near Tracy to 380 feet amsl in the Midway vicinity where the alignment terminates.

Vegetation varies from extensive crops of alfalfa and wheat to annual grassland used for pasture. Irrigated pasture is present along some portions of the route. Trees noted are primarily introduced species and include palm, walnut, pear, Italian cypress, and various other flowering trees, as well as valley oak along roadsides.

Please refer to the **Executive Summary** section of this Addendum for additional information and maps of the project development region and the project area.

Prehistoric and Ethnographic Setting

For a discussion of the prehistoric and ethnographic settings that apply to this project please refer to the FSA.

Historical Setting

There are several historical resources that may be impacted by the proposed water line. A discussion of the history of the area is essential to understanding the importance of those cultural resources. The project area's development began long before the establishment of the town of Tracy. In the flood of immigration that followed the discovery of gold in California in 1848, horse and wagon traffic between the bay area and the new mining center of Stockton quickly established roads. With roads came settlement. Mountain House, for instance, started as a roadside tavern and stagecoach stop in 1849 set up along Grant Line Road near Midway Road. Very soon, settlers developed ranches on land throughout the area (Foster Wheeler 2002:2-9).
Either a local sheep rancher or railroad surveyors discovered coal in the Tesla area in 1857 while charting the first railroad alignment in the region. Their find was located in

Corral Hollow along the Alameda-San Joaquin county line, which reportedly was used as a natural entrapment for wild horses between 1848 and 1855 by both *Californios* and Americans. Initially wagons were used to haul the coal to Mohr's landing (near Bethany) for ship transport to San Francisco. Eventually river transport was replaced by railroad. Despite this early mining, this region was largely agricultural, consisting of large dry farming parcels in the years before the development of regional irrigation systems. The western portion of the project area, specifically the Midway and Mountain House area, marked a rural settlement between Stockton and Oakland.

The community of Tracy was established in 1878 at the intersection of two lines of the Central Pacific Railroad (CPRR, later the Southern Pacific and now the Union Pacific). These two lines were the Altamont Line (completed in 1869) and another newer line extending from Martinez down the western edge of the San Joaquin Valley completed in 1878 (Matthews 1997:1). Tracy's early economy depended on dry-land farming, specifically wheat and barley, and the railroad.

The line of the CPRR that ran through the Midway area has been noted as the segment that completed the transcontinental railroad from Sacramento to the San Francisco Bay area, completing the connection of the track from the Atlantic to the Pacific coast. A railroad bridge on this line near Mossdale Crossing in San Joaquin County has been designated as State Historic Landmark 780-7, which places its importance as the final link in the Pacific Railroad. This segment was also designated as the Niles-Sacramento line on historic USGS map of the area, including the Tesla 1907 topographic quadrangle (USGS 1907). The Alameda Terminus of the Transcontinental Railroad is also a state landmark SHL-440, located in Alameda at the western end of the Niles-Sacramento line (California, State of 1996).

In 1894, the town of Tracy became a major switching point for the railroad. The regional roundhouse was moved from Lathrop to Tracy, in part to store the numerous locomotives needed to get the heavy trains over the Altamont Pass (Matthews 1997:2). As long as trains monopolized transportation in the West, the Tracy operations were important to the Southern Pacific (SP) (Matthews 1997:3).

Trucks eventually replaced the railroad's role in the local ranching economy just as increasing private automobile use put Tracy in easy driving range from other cities. Old country roads, such as Midway, Bethany, and Mountain House roads, were improved and converted to county and even state highways. The historic Lincoln Highway, the first paved transcontinental highway, was designated in the project area on roads already long established. Through the project area the highway ran from Tracy to the bay area northwest along Byron Road then bearing left onto County Road No. 1410, now known as Grant Line Road. The highway proceeded through Mountain House, a community that at its height included a general store, gas station and two-room schoolhouse (Lewis 2003).

The development of an irrigation system also had a major affect on the project area. When the West Side Irrigation District was established in 1915 and its canals completed in 1917, it became among the first to provide local farmers with sufficient water to move from dry farming, such as growing grain crops, to other endeavors, especially dairying operations. This allowed farmers of smaller parcels to produce enough income to

survive. As a result, many of the larger ranches were subdivided into farms with less acreage. The most intense subdivision of land in the project area occurred immediately north of Tracy, where housing tracts with parcels as small as one to five acres were established. In 1931, this area was transected by a Pacific Gas and Electric transmission line carrying power from its newly constructed Tiger Creek hydroelectric project on the Mokelumne River to the Newark Substation in the bay area (Baker 2003a, 2003b; Tinkham 1921:1155).

During World War II, Tracy became a major shipping point and helped prolong the railroad's operations, even as increasing automotive trucking companies began to cut into the railroad's freight market (Matthews 1997:3). In the late 1950s, the railroad finally closed its operations in Tracy. The loss to the economy was softened by the construction of factories, warehouses, and distribution centers throughout the 1960s, 1970s, and 1980s, which have continued to broaden Tracy's economic base. The railroad shop closure and the subsequent diversified economic development were largely spurred by improved transportation corridors, including Interstates 580, 205, and 5 (Matthews 1997:5). In the project area, the railroad ceased all its local interaction with farmers. The rails were operating until 1986, when they were abandoned by the Southern Pacific. The Union Pacific Railroad Company now owns the trackage after buying all of Southern Pacific's holdings in the 1990s.

RESOURCES INVENTORY

The goal of this research is to identify archaeological sites and historical resources, including structures that may qualify for the California Register of Historic Resources and that may be affected by the proposed reclaimed water line. Another purpose is to provide a preliminary assessment of the potential for buried cultural resources along the proposed route, and of the likelihood the proposed project would actually affect such resources. The area of affected environment will consist of the trench alignment for the water line, temporary staging and equipment parking areas and a pumping station located at the Tracy Waste Water Treatment Plant. An additional pumping station would be located either in San Joaquin County within one-quarter mile of the Alameda County Line or on Midway Road, adjacent to the California Aqueduct. To achieve these goals research was conducted in two phases. The first phase consisted of a literature search for previously recorded historic information about the project area. The second phase consisted of field examination of the proposed project location and adjacent lands to the degree physically and legally possible.

Literature and Record Search

Literature research for this project consisted of a review of published and unpublished records, historical maps and historic and ethnographic information on indigenous and immigrant peoples, who may have occupied the project area. Repositories consulted in 2003 included the California State Library, the Central California (CCIC) and Northwest California (NWIC) Information Centers of the California Historic Resource Information System, and the Natural Resource Conservation Service of the United States Department of the Interior. Classes of documents consulted included historic topographic and county maps, archaeological reports and site records on file with the CCIC and NWIC, the National Register of Historic Places and listings for the CRHR, and published and unpublished county and local histories and lists of historic resources.

The CCIC record search identified one known prehistoric site, CA-SJO-7, which may be located near the project alignment. Historical features include the original route of the Central Pacific Railroad from Sacramento to Oakland (the Sacramento – Niles Route), another CPRR route paralleling Byron-Bethany Road north from Tracy through Antioch, Byron-Bethany Road, Midway Road which was in place by 1907, the Lincoln Highway (Grant Line Road), Mountain House Road, the West Side Irrigation District Main Drain (P-39-000470), and the Bellota-Newark 250 KV transmission line.

Field Surveys

Field research consisted of a pedestrian survey of the proposed project alignment by two archaeologists. All alternatives, with the exception of a linear segment crossing a fenced agricultural field located west of the waste water treatment plant, were surveyed. Adjacent private property that consisted of house yards or fenced agricultural fields was not entered due to lack of entry permission from the owners. This included the entirety of the proposed northern alignment alternative between Corral Hollow and Naglee Road. If this pipeline route is used, the portion between Coral Hollow and Naglee Road would need to be surveyed prior to ground disturbance for the project. The southern alternative route following Larch Road between Corral Hollow and Naglee roads was also surveyed. Since the project description calls for remaining within the public right-of-way and following along the shoulders of the roads, where irrigation or drainage canals paralleled the alignment, the far sides of these canals were not included in the surveyed area. Please see **Executive Summary Figure 1** for a map of the proposed reclaimed water line route.

Impacts

Residences

In addition to the approximately ten modern residences in the area, **Executive Summary Figure 1** indicates that 15 potentially historical residences and/or ancillary structures are located within or near the proposed linear alignment for the water line. The present project design calls for placing linear water line within the existing road right-of-way on the shoulder or along the center line of Midway, Byron, Grant Line and Mountain House roads. At present, historical structures along the linear alignments have not been evaluated for significance. Present plans indicate that there should be no significant impact to these structures. Primary records have been prepared for all potentially historic structures along the project linear route.

Central Pacific Railroad (CPRR): Niles – Sacramento Line (P-01-010501)

The CPRR grade is part of the original Transcontinental Railroad between Sacramento and Oakland. The California State Department of Parks and Recreation has included a portion of this line between Sacramento and Oakland as State Historic Landmark (SHL) 780-7. The landmark text indicates that the Mossdale Bridge, crossing the San Joaquin River, was the true completion of the Transcontinental Railroad completing a rail link between the Pacific and Atlantic Coasts. The Mossdale Bridge derives its historical significance from the railroad itself (California, State of 1996).

Segments of the first transcontinental railroad have been evaluated for the National Register of Historic Places (NRHP) and determined eligible in Utah and California. In Utah, portions of the abandoned Promontory Branch were determined to possess sufficient integrity for listing despite removal of the rails and tracks and the loss of associated sidings, stations, and towns. Little but the grade, archaeological remains, and setting remain on the abandoned segments of the railroad's original alignment. These abandoned segments are listed in the National Register under criteria A and D (Clement 1997:1-10). A segment of the line east of Truckee has been found eligible under Criterion A. The California Historic Preservation Officer concurred with the eligibility of the railroad and the evaluation of the Truckee segment on July 16, 1999 (Abeyta 1999).

The evaluation of these segments is built on the supposition that the first transcontinental railroad as a whole is eligible for the NRHP at a national level of significance under Criterion A, and consequently in California the resource is eligible for the CRHR under Criterion 1 for its significance in transportation history, in uniting the East and the West and in the development of the West. It is also assumed that the first transcontinental railroad as a whole is eligible for the NRHP under Criterion C and the CRHR under Criterion 3, as an engineering and human achievement. Abandoned segments that still retain their grade and alignment qualify under NRHP Criterion D (Clement 1997:1.09-1.11) and CRHR Criterion 4. The period of significance established for the railroad is 1869 to 1945, beginning with the line's completion in 1869, through the years of its role in the settlement and development of the West, to the end of the railroad's notable achievements during World War II.

The Pacific segment of the transcontinental railroad did not receive the media attention of the Sacramento to Utah segment, but was an integral part of a transportation plan to link San Francisco and the Bay Area with Sacramento, Ogden, Utah and Chicago, Illinois. Given its association with the transcontinental railroad, the inclusion of other abandoned segments of the main line on the NRHP, and the designation of some contributing elements of the Oakland to Sacramento segment of the line as a State Historic Landmark, staff evaluates the grade in the project area as potentially significant under CRHR Criteria 1, 3, and 4.

The grade is associated with a highly significant event in the transportation history of California offering eligibility under Criterion 1. The grade embodies engineering principles and techniques, including the cut stone masonry culvert or bridge over Patterson Run, that embody characteristics of a period, region and method of construction (CPRR) which offers potential significance under Criterion 3. Similar stone culverts and tunnels, in fact, exist on the CPRR line between Sacramento and Truckee. They have been recorded as Historic American Engineering Record No. CA-196 (Snyder 1998). Lastly, based upon the historic construction, use, and maintenance of the grade by the CPRR and later SP, the grade offers a potential archaeological record of the industrial archaeology of the railroad grade from initial construction until abandonment, which may constitute significance under Criterion 4. The segment within or adjacent to the project area (including the stone bridge) retains integrity of location, design, materials, workmanship, feeling and association. The setting, although somewhat compromised by construction of the Tesla Substation and transmission lines,

still remains rural in character and retains the sense of open-country crossing essential to the original feel of the railroad.

Hardesty and Little (2000:87), discussing the evaluation of a logging railroad in Arizona, point out that a railroad segment must have a majority of ties and rails in place *or* a majority of the road bed must be intact. The road bed of the CPRR grade is in good condition with much of the ballast still present. Associated features such as a stone masonry culvert are still present. The applicant suggests that a fiber optic line installed within the grade alignment has compromised its integrity, but there is no surface evidence of this. Although the ties and rails are missing, the condition of the road bed shows that the grade with associated structural features still has sufficient integrity to satisfy the demands of integrity as discussed by Hardesty and Little (2000). It is directly comparable to National Register-eligible abandoned segments of the transcontinental railroad in Utah. Staff considers the CPRR grade to meet the criteria for eligibility for the CRHR under criteria 1, 3, and 4.

CPRR: Tracy – Martinez Route

This branch railroad line extends from Tracy northwest through Bethany and follows the southern edge of the delta and shore of Suisun Bay, through Carquinez Strait and then south to Oakland. The route is mentioned in the 1879 Thompson and West's *History of California*. Different segments of this alignment were recorded by PAR in 2001 and by Van Citters in 2001. The alignment was considered to lack sufficient integrity to be eligible for the California Register of Historic Resources or the National Register of Historic Places. Staff agrees with this assessment.

Byron – Bethany Road

Byron – Bethany Road was previously recorded in Alameda and Contra Costa counties. The road was initially built by the Central Pacific Railroad paralleling the Martinez – Tracy branch of the CPRR in 1878. The road in Alameda County was included as part of a Scenic Corridor in 1966. The road was recorded by PAR in 2001 and was found at that time to lack sufficient integrity to be eligible for the California Register of Historic Resources or the National Register of Historic Places. Staff agrees with this assessment.

Midway Road

The route appears on maps of the region as early as 1878. The road has been modified and a small settlement has developed along the northern portion of the road near the Altamont Speedway. It may also have been relocated, although this is uncertain due to inconsistencies in historic maps. The northern end of the alignment has been relocated in order to accommodate the construction of the California Aqueduct and is not original. The resource does not appear to retain sufficient integrity to be regarded as eligible for the California Register of Historic Resources.

Grant Line Road (Lincoln Highway)

Grant Line Road in the project area follows the historic alignment of the Lincoln Highway proposed by an industrialist and a racing enthusiast, Carl Fisher and Henry Joy, in 1913. Construction may have begun on new segments during or after World

War I. The Lincoln Highway ultimately was the first transcontinental paved route, running from San Francisco to New York City. Avoiding congested areas and taking a direct route from New York to San Francisco, the Lincoln Highway opened much of the interior of the continent to travelers in a way unmatched since the construction of the railroad system, and was unique in the access provided to individuals and families. The route has significance as the first of its kind, paving the way for the development of the modern system of federal highways.

The earliest route of the highway in California ran through Altamont and Tracy, traversing the historic Altamont route from the Livermore Valley into the lower San Joaquin Valley. This road, in use since the mid-nineteenth century, was designated County Road 1410 and later Grant Line Road, extended from Mountain House into Tracy. The segment retains much of the original rural ambience with lines of walnut trees along portions and pasture and agricultural fields bordering it. Some new construction of dwellings has altered the ambiance slightly, but dwellings were present along the route from the beginning. The route, lined in places with stately walnut trees, retains a strong sense of time and place and has integrity of setting, location, design, feeling and association. As such, the segment appears potentially eligible under Criterion 1 of the California Register of Historic Resources for its role in transportation history.

Mountain House Road (P-01-010450)

Mountain House Road was previously recorded as part of the East Altamont power project in 2001. The road has been in use since as early as 1874 and the present alignment was set by 1889. The road is part of a scenic county road designation in Alameda County. The previous records conclude that the road lacks sufficient integrity to be considered potentially eligible for the California Register of Historic Resources or the National Register of Historic Places. Staff agrees with this assessment.

Delta – Mendota Canal (P-39-000089)

The canal has been previously recorded as part of the work for the East Altamont power project and again for the TPP AFC (2002). The canal was a key element in the California Central Valley Project and was constructed between 1946 and 1952. The canal is considered historically significant and potentially eligible for the California Register of Historic Resources or the National Register of Historic Places (PAR 2002, Foster-Wheeler 2002). Staff agrees with this assessment.

West Side Irrigation District Main Drain (P-39-000470)

This drainage system apparently was constructed by the West Side Irrigation District during the 1920s. The canal is a major earthwork, 35 feet wide and 15 feet deep. The primary function of the canal was to alleviate drainage problems created by irrigation in the West Side and Naglee – Burk irrigation districts. Development, maintenance and design changes may have altered the basic structure. Windmiller and Osanna (2000) noted that the entire resource may have been relocated over time and ascertained that the resource does not appear eligible for the California Register of Historic Resources. Staff agrees with this assessment.

Bellota-Newark 230 KV Transmission Line

This resource was constructed by Pacific Gas and Electric Company around 1931 to carry electrical power from Tiger Creek generators in the Sierra Nevada Mokelumne River watershed to the Bay Area. The transmission line is the second of this scale built in California, the earlier Pit System being the first. The resource is an early high voltage transmission line, but is not the earliest in California, nor is it of unusual or original engineering design. The line, therefore, does not appear eligible for the California Register of Historic Resources.

PROJECT IMPACTS AND MITIGATION

Various laws apply to the treatment of cultural resources. These laws require the Energy Commission to categorize resources by determining whether they meet several sets of specified criteria. These categories then in turn influence the analysis of potential impacts to the cultural resources and the methods and consultation required mitigating any such impacts.

Impacts to cultural resources may result either directly or indirectly during the pre-construction, construction, and operation phases of a project. Direct impacts are those which may result from the immediate disturbance of resources, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, alteration, or demolition. Indirect impacts are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource materials due to improved accessibility. Cumulative impacts to cultural resources may occur if increasing amounts of land are cleared and disturbed for the development of multiple projects in the same vicinity as the proposed project.

Impacts

Residences

All of the residences are outside the impact area of the project. Impacts associated with the reclaimed water line construction would be temporary in nature and would not materially change the visual environmental for the residences. A small pump station is planned somewhere along the alignment but its location has not yet been determined. This pump station can be placed near existing engineering structures and should not visually affect the residences. No mitigation for these residences is required.

Central Pacific Railroad (CPRR): Niles – Sacramento Line (P-01-010501)

The CPRR/Transcontinental Railroad grade is associated with a highly significant event in the transportation history of California offering eligibility under Criterion 1. The grade embodies engineering principles and techniques, including the cut stone masonry culvert or bridge over Patterson Run, that embody characteristics of a period, region and method of construction (CPRR) which offers potential significance under Criterion 3. Based upon the historic construction, use, and maintenance of the grade by the CPRR and later SP, the grade offers a potential archaeological record of the industrial archaeology of the railroad grade from initial construction until abandonment, which may constitute significance under Criterion 4. The segment within or adjacent to the project

area retains integrity of location, design, materials, workmanship, feeling and association. The setting, although somewhat compromised by construction of the Tesla Substation and transmission lines, still remains rural in character and retains the sense of open-country crossing essential to the original feel of the railroad. Although the ties and rails are missing, the condition of the roadbed shows that the grade with associated structural features still has sufficient integrity to satisfy the demands of integrity. Staff considers the CPRR grade to meet the criteria for eligibility for the CRHR under criteria 1, 3, and 4.

One component of the reclaimed water line would cross the CPRR grade, part of the Transcontinental Railroad between Sacramento and Oakland. Proposed infrastructure would physically affect the CPRR grade, potentially adversely affecting the resource's integrity. The railroad grade needs more in-depth recordation in the areas where the project will cross the grade. The grade shall be restored to the pre-construction condition. The recordation and restoration would mitigate impacts to the railway grade from the construction of the crossings. Monitoring and recordation of the grade shall be conducted when construction equipment is operating within the boundaries of the grade or its associated cut or fill areas. Recordation and monitoring efforts should be provided in the Cultural Resources Monitoring and Mitigation Plan.

CPRR: Tracy – Martinez Route

This branch railroad line extends from Tracy northwest through Bethany and follows the southern edge of the delta and shore of Suisun Bay, through Carquinez Strait and then south to Oakland. The alignment lacks sufficient integrity to be eligible for the California Register of Historic Resources. No mitigation for this resource is required.

Byron – Bethany Road

Byron – Bethany Road was initially built by the Central Pacific Railroad paralleling the Martinez – Tracy branch of the CPRR in 1878. The road lacks sufficient integrity to be eligible for the California Register of Historic Resources. No mitigation for this resource is required.

Midway Road

The route appears on maps of the region as early as 1878. The road has been modified and may also have been relocated. The northern end of the alignment within the proposed reclaimed water line project has been relocated in order to accommodate the construction of the California Aqueduct and is not original. The resource lacks sufficient integrity to be regarded as eligible for the California Register of Historic Resources. No mitigation for Midway Road is required.

Grant Line Road (Lincoln Highway)

Grant Line Road in the project area follows the historic alignment of the Lincoln Highway proposed by industrialists and racing enthusiasts, Carl Fisher and Henry Joy, in 1913. Construction may have begun on new segments during or after World War I. The Lincoln Highway ultimately was the first transcontinental paved route, running from San Francisco to New York City. Avoiding congested areas and taking a direct route from New York to San Francisco, the Lincoln Highway opened much of the interior of

the continent to travelers in a way unmatched since the construction of the railroad system, and was unique in the access provided to individuals and families. The route has significance as the first of its kind, paving the way for the development of the modern system of federal highways.

The segment retains much of the original rural ambience with lines of walnut trees along portions and pasture and agricultural fields bordering it. The route, lined in places with stately walnut trees, retains a strong sense of time and place and has integrity of setting, location, design, feeling and association. As such, the segment appears potentially eligible under Criterion 1 of the California Register of Historic Resources for its role in transportation history.

Grant Line Road will be directly affected by pipeline construction. Physical effects will be temporary and will not be significant, as the road will be restored to its current appearance following construction. Construction west of Byron Road has the potential to affect the root systems and health of mature walnut trees lining the route. These trees contribute to the ambiance of this segment of the route and are contributing elements of the road. The project shall adhere to the middle of Grant Line Road where the route is lined with walnuts trees to minimize any damage to the root systems of these trees.

The construction of the pumping station will locally affect visual qualities along the historic route; however, the majority of the route will retain its significance and ambiance. In addition, several residences have been constructed along the route since its initial development and the proposed changes visually will not be different than those that have already occurred in this rural area. The pumping station is considered a less than significant effect.

Mountain House Road (P-01-010450)

Mountain House Road was previously recorded as part of the East Altamont power project in 2001. The road has been in use since as early as 1874 and the present alignment was set by 1889. The road is part of a scenic county road designation in Alameda County but lacks sufficient integrity to be considered potentially eligible for the California Register of Historic Resources. No mitigation for this resource is required.

Delta – Mendota Canal (P-39-000089)

A segment of the Delta-Mendota Canal has been determined to meet the criteria for eligibility for the NRHP and segments of the Delta-Mendota Canal have been determined eligible for the CRHR for other projects. The applicant likewise has determined that the Delta-Mendota Canal is eligible for the NRHP and consequently the CRHR. Staff agrees that the Delta-Mendota Canal meets the eligibility criteria for the CRHR.

Staff does not anticipate direct or indirect effects to the resource as a result of the reclaimed water line project. However, it would be necessary to bore under this resource. Locating the pumping station along Grant Line Road may have a visual effect on the resource, if the pump is located near the county line within view of the canal. However, the canal's significance lies in its engineering design and adding a pump

station to an area that already contains canal-associated pump stations would not be a significant impact. The Bureau of Reclamation is required to consider the effects on historical properties under Section 106 of the National Historic Preservation Act. Although impacts are not anticipated, mitigation measures would be implemented if there is an impact to the Delta-Mendota Canal.

West Side Irrigation District Main Drain (P-39-000470)

This drainage system apparently was constructed by the West Side Irrigation District during the 1920s. The resource may have been relocated over time and does not appear eligible for the California Register of Historic Resources. No mitigation for this resource is required.

Bellota-Newark 230 KV Transmission Line

This resource was constructed by Pacific Gas and Electric Company around 1931. The resource is an early high voltage transmission line, but is not the earliest in California, nor is it of unusual or original engineering design. The line does not appear eligible for the California Register of Historic Resources. No mitigation for this resource is required.

Archaeological Resources

One prehistoric archaeological site, CA-SJO-7, was identified in the CCIC record search as located near the reclaimed water line. Due to discrepancies between the original site record location and the CCIC plotted map location there is some uncertainty regarding the exact location of this resource. It may be located somewhere in the vicinity of Tracy Boulevard and its intersection with Holly Drive. Monitoring in the vicinity of this site is an appropriate mitigation measure to ensure that subsurface features are identified during construction. Monitoring measures should be included in the Cultural Resources Monitoring and Mitigation Plan. If CA-SJO-7 can not be avoided, then additional mitigation would be required under **CUL-6**.

Mitigation Summary

Three resources only: Delta – Mendota Canal, the CPRR/Transcontinental Railroad alignment, and the Lincoln Highway (Grant Line Road) appear to be of potential historic significance. By remaining as far from the root system of the walnut trees lining Grant Line Road and by restoring the appearance of the road subsequent to project construction, project effects should be less than significant. Recording the segment of CPRR route subjected to impacts and monitoring the pipeline construction through the grade will result in a less than significant impact to the CPRR. Impacts to archaeological site CA-SJO-07 would not occur if the site is avoided. The impacts and potential impacts to cultural resources would be mitigated below a significant level by compliance with the following mitigation:

- Impacts to the Delta Mendota Canal would be mitigated by boring under the canal.
- Impacts to the suspected location of archaeological site CA-SJO-07 can be mitigated by full time cultural resources monitoring in the vicinity of the site. **CUL-7** is amended to add full time monitoring in the vicinity of the pre recorded site. If CA-SJO-07 can not be avoided then additional mitigation would be required under **CUL-6**.

- Impacts to the CPRR would be mitigated by the in-depth recording, monitoring and reconstruction of the CPRR required by **CUL-9.**
- To avoid impacts to the setting of Lincoln Highway (Grant Line Road), the old walnut trees need to be preserved. Preservation of the trees can be accomplished by avoiding impacts to the root system of the trees during construction. The root system can be avoided by installing the pipe outside the drip line for the trees. The center of Grant Line Road appears to be a likely location for pipe installation Another location for trenching, outside the drip line, would be acceptable, but additional cultural resources surveys would be necessary if ground disturbance would occur more than 50 feet outside the present road alignment. **CUL-10** requires avoidance of the tree roots.
- If the northern alignment is used, the portion of the alignment between Corral Hollow and Naglee Road would need an archaeological survey prior to ground disturbance for the project.
- **CUL-11** requires the project owner to provide copies of the federal permit and correspondence from the federal agency. This will provide documentation that federal agency has required the project owner to comply with federal regulations.

With the exception of **CUL-8** which is specific to the project site, all the conditions of certification recommended for the original project shall be applicable to this reclaimed water line

COMPLIANCE WITH LORS

Implementation of the conditions of certification in this document would ensure that this project complies with all applicable federal and State laws with respect to cultural resources. Boring below the Delta Mendota Canal would require permission from the Bureau of Reclamation. This would trigger the compliance requirements of Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth at 36 CFR 800.

COORDINATION WITH OTHER AGENCIES

Boring below the Delta Mendota Canal would require permission by the Bureau of Reclamation, but would not require coordination with the Energy Commission. The federal agency would consult with the State Historic Preservation Officer as required by Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, set forth at 36 CFR 800. **CUL-11** would ensure that the Energy Commission is informed of the conditions of permitting, any required mitigation by the federal agency, and the completion of the mitigation.

CONCLUSION

If the following conditions of certification are properly implemented, the project would comply with applicable LORS, and no significant impact to cultural resources would occur.

Staff recommends the adoption of the following proposed conditions of certification, which together with conditions **CUL-1** through **CUL-9**, incorporate the mitigation measures discussed above.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-10 Ground disturbance for the reclaimed water line shall avoid damaging the root system of the historic walnut trees that line portions of Grant Line Road. The ground disturbance for the water line shall occur outside the drip line of tree foliage. The location of the water line shall be in the center of Grant Line Road or at another location that avoids the walnut tree roots. Monitoring shall occur full time in the vicinity of the walnut trees to ensure avoidance. Monitoring shall also occur full time along the portion of the pipeline that extends from Tracy Boulevard to Corral Hollow Road. If the northern alignment is used, at least 10 days prior to ground disturbance, a pedestrian archaeological survey shall be conducted on the portion of the alignment between Corral Hollow Road and Naglee Road. Any discoveries shall be reported pursuant to **CUL-6**.

Verification: No less than 20 days prior to ground disturbance in the vicinity of the historic walnut trees, the project owner shall submit, for CPM approval, a description of the chosen route and demonstrate via map or aerial photo that the drip line of the walnut trees will be avoided. Detailed reports of monitoring in the vicinity of the walnut trees and on the portion of the pipeline route that extends from Tracy Boulevard. to Corral Hollow Road shall be provided in the Monthly Compliance Report.

CUL-11 If a federal permit triggers Section 106 Compliance, the project owner shall ensure that a copy of the permit and copies of correspondence from the federal agency to the project owner are provided to the CPM.

Verification: Within two weeks of permitting by a federal agency, copies of the permit shall be provided to the CPM. Within two weeks of the project owner receiving correspondence from the federal agency, the project owner shall provide copies of the correspondence to the CPM.

REFERENCES

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HAZARDOUS MATERIALS MANAGEMENT

Testimony of Alvin J. Greenberg, Ph.D

INTRODUCTION

The purpose of this analysis is to evaluate the staff proposed Reclaimed Water Supply Pipeline for potentially significant hazardous materials management related impacts. Please refer to the **Hazardous Materials Management** section of the FSA for discussion of the use of hazardous materials at the Tesla Power Project (TPP), appropriate mitigation measures, and proposed Conditions of Certification to ensure less than significant impacts.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Please refer to the LORS listed in the **Hazardous Materials Management** section of the FSA.

ANALYSIS

The City of Tracy Wastewater Treatment Plant is located approximately eight miles east of TPP near the intersection of Arbor Avenue and Holly Drive, north of the City of Tracy. A pumping station would be necessary at the wastewater treatment plant and along the 11-mile pipeline route (see **Executive Summary**).

PROJECT IMPACTS AND MITIGATION

There are minor amounts of hazardous materials (fuels, solvents, lubricants, etc.) used in the construction of pumping facilities and water pipelines. The pumping stations would be electric driven and therefore would not require fuel for operation. Because of the small amounts, low potential for off-site migration, and/or solid form, the use of hazardous materials during the construction of the 11-mile wastewater pipeline or pumping stations would not result in a significant risk to the public.

The municipal effluent from the treatment plant would need to be processed and pre-treated before it can be used as a cooling medium in the TPP. Manufacturers of cooling equipment typically specify that the cooling medium to be used meet certain criteria in order to be acceptable for use with their equipment. This is necessary to alleviate the general water quality problems of scaling, corrosion, biological growth, and fouling. The pre-treatment involves chemical conditioning. The type, level, frequency, and intensity of the pre-treatment, as a minimum, would depend on three factors: 1.) the quality of the reclaimed water, 2.) the ability of the treatment plant to consistently maintain the quality of the effluent without violating regulatory discharge standards, and 3.) the technical specifications for the cooling medium as required by the cooling equipment manufacturers. TPP's design engineer would need to specify the type and amount of each chemical that would be required under the reclaimed water-cooling scenario.

COMPLIANCE WITH LORS

Energy Commission staff concludes that the TPP would be able to comply with all applicable LORS regulating the management of hazardous materials during construction and operation of this proposed water pipeline and pumping stations.

COORDINATION WITH OTHER AGENCIES

No coordination with other agencies regarding hazardous materials is necessary for the reclaimed water pipeline.

CONCLUSIONS

The use of reclaimed water in the cooling process would require the storage and use of hazardous chemicals. As a minimum, the quality of the reclaimed water, cooling medium specification requirements, proposed tertiary treatment, and applicable waste discharge standards would all influence the types of chemicals needed and their quantities for reclaimed water cooling. Any risks associated with chemical usage in cooling water should be adequately mitigated through compliance with the appropriate federal, state, and local requirements for hazardous materials use and adherence to staff's proposed conditions of certification described in the FSA.

PROPOSED CONDITIONS OF CERTIFICATION

Please refer to the Conditions of Certification in the **Hazardous Materials Management** section of the FSA.

REFERENCES

References are the same as those in the FSA.

LAND USE

Testimony of Eileen Allen

INTRODUCTION

The purpose of this analysis is to evaluate the land use impacts from the construction and operation of the staff recommended Reclaimed Water Supply Pipeline for the Tesla Power Project (TPP); and to recommend mitigation to ensure that these impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Within the land use section of the Final Staff Assessment (FSA), this proposed pipeline is discussed under the heading "Conformity with Laws, Ordinances, Regulations, and Standards", and the sub-heading "TPP Linear Facilities". The applicable land use LORS are the Alameda County East County Area Plan (ECAP), the Alameda County Zoning Code, the San Joaquin County General Plan, and the San Joaquin County Development Title (functions as the San Joaquin County Zoning Code), which are summarized in the FSA, and the City of Tracy's Urban Management/General Plan, which is summarized below.

CITY OF TRACY

The City of Tracy's Urban Management/General Plan is a long range planning document guiding development in and around the City of Tracy. Its Land Use Element works in conjunction with the City's Zoning Ordinance to regulate land uses within the city limits.

ANALYSIS

As discussed in the **Land Use** section of the FSA, staff's Reclaimed Water Supply Pipeline would begin at the Tracy Wastewater Treatment Plant (TWWTP), and run along Arbor Road within the Tracy city limits for approximately 0.5-mile. At the intersection of Arbor Road and Tracy Boulevard the route would enter the unincorporated area of San Joaquin County and proceed west through agricultural lands for approximately 1.25 miles until Naglee Road, continue within the public rights-of-way of several local roads, cross under Interstate 580, and proceed south where it would terminate at the Tesla Power Plant. The agricultural land just west of the TWWTP out to Corral Hollow Road is being purchased by the City of Tracy, for use as a buffer between the industrial and infrastructure uses in the Arbor Road vicinity, and residential and commercial uses. The City plans to lease the land for a continuation of the current agricultural activity. It expects to complete the land acquisition process by the end of summer 2003 (Bayley, 2003).

COMPLIANCE WITH LORS

ALAMEDA COUNTY

Approximately three miles of the pipeline alignment is located within Alameda County, in an area that has been designated for agriculture in the ECAP, and classified as an agricultural zoning district. Alameda County staff has stated that the ECAP including Measure D and the Zoning Code, allows development of infrastructure for items such as utility services in agricultural areas (County of Alameda, 2002), staff has concluded that the proposed pipeline would qualify as infrastructure, and would therefore comply with Alameda County LORS. If Alameda County was the lead agency for this project, it would review the need for a conditional use permit, and likely conclude that such a permit would not be required since the route would be confined entirely to the rights-of-way along county roads (Jensen, 2003). Encroachment permits for pipeline construction along these roads would be required which are discussed in the **Traffic & Transportation** section of this Addendum.

SAN JOAQUIN COUNTY

Approximately 7.5 miles of this pipeline would run through the unincorporated area of San Joaquin County, in an area designated for agriculture in the San Joaquin County General Plan, and classified as an agricultural zoning district. The route would run along county roads with the exception of approximately 1.25 miles, which would run along the edges of agricultural fields. The short segment of pipeline route crossing agricultural land would be consistent with the San Joaquin County General Plan designation of General Agriculture, since infrastructure services such as buried water pipelines and other underground utilities are compatible with agriculture (County of San Joaquin, 1992). This segment is zoned “General Agricultural” (AG) in the San Joaquin County Development Title.

If San Joaquin County were the lead agency for this project, the County would require a Conditional Use Permit (CUP) for the pipeline segment running through agricultural fields, and would make the following findings:

1. The project requires locating the use in an area designated as Agriculture or Resource Conservation in the General Plan;

2. The use will not have a significantly detrimental effect on agricultural activities in the vicinity; and

3. The site of the use can be rehabilitated for agricultural production or a permitted use in the AG zone if the project is temporary.

Since the Commission is the lead agency, staff has addressed the required findings as follows:

One segment of the pipeline is located in an agricultural area, because the length of the pipeline would be increased if it did not cross the area, and road and traffic disruption near a cluster of homes along Larch Road would be avoided. The San Joaquin County

Development Title Table 9-605.2 addresses "Uses in Agricultural Zones," with minor utility services that include natural gas pipelines, permitted in the General Agricultural District. The pipeline would not have a significantly detrimental effect on agricultural activities, since it will be buried and placed in a dirt access strip adjacent to the edge of the cultivated area. The site of the pipeline would be temporarily disrupted during the construction process, and then restored for agricultural use.

The County's CUP would not specify items such as minimum pipeline depth. The County staff noted that if San Joaquin County were the lead agency this type of detail would likely be addressed by the Building Inspection staff, rather than the land use permitting staff (Van Buren, 2003). Since the Commission is the lead agency, this detail would be addressed during compliance with the pipeline- related LORS listed in the **Facility Design** section of the FSA. The project owner would need to acquire an easement from the property owner, the City of Tracy. Similarly, the project owner may need to acquire easements from several private property owners in the Naglee Road area, if the route passes between their houses, before entering the City of Tracy's agricultural property again, or follows an alternate route segment along Larch Road. Staff has concluded that the impact would be less than significant since pipeline construction would affect relatively few residents over a short time.

CITY OF TRACY

The approximately one-half mile of proposed pipeline segment within the City of Tracy would run through an area designated for Public Facilities in the City's Urban Management/General Plan, and zoned for Light Industrial in the Zoning Ordinance. The project would be consistent with both the General Plan and Zoning Ordinance. If the City of Tracy was the lead agency for this project, it would review the need for a conditional use permit, and likely conclude that such a permit would not be required since the route would be confined entirely to the rights-of-way along Arbor Road within the City limits (Bayley, 2003). An encroachment permit for pipeline construction along this road would be required which is discussed in the **Traffic & Transportation** section of this Addendum.

IMPACTS AND MITIGATION

In 2002, the City of Tracy approved expansion of its existing treatment plant such that its capacity would be nearly doubled. Staff's proposed wastewater pipeline would be connected to this larger facility. This pipeline would not have a growth inducing impact in Alameda County (or San Joaquin County and the City of Tracy) since it would be involved in meeting the cooling water needs of an electric power plant, rather than enabling urban development such as new homes.

CONCLUSIONS

Installation of staff's proposed wastewater pipeline would be consistent with the applicable local LORS, and it would not have any significant or adverse land use impacts.

PROPOSED CONDITIONS OF CERTIFICATION

The proposed water pipeline would not require any land use Conditions of Certification.

REFERENCES

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NOISE AND VIBRATION

Testimony of Ron Brown

INTRODUCTION

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the construction and operation of staff's proposed Reclaimed Water Supply Pipeline for the Tesla Power Project (TPP) and to recommend procedures to ensure that these impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

All LORS are as contained in the TPP Final Staff Assessment (FSA) published April 8, 2003.

ANALYSIS

The water pipeline project consists of construction of an 11 mile trench as described in the **Executive Summary**. Noise impact from the project would consist of temporary construction noise and noise from the pumping station during operation of the TPP.

IMPACTS AND MITIGATION

The primary noise impact for this project would be construction of the 11-mile trench from the Tracy Wastewater Treatment Plant (TWWTP) to the TPP.

Because construction activity and related traffic are regulated by the proposed Conditions of Certification in the FSA, and are of limited duration, potential construction noise impacts to receptors in the TPP project area are considered to be less than significant. This is particularly true for construction of the pipeline and pumping station, which would be a much shorter duration and would be limited to daytime hours as required in Condition of Certification **NOISE-8**.

During operation of the plant, the pumping station could impact nearby residences. Since the applicant did not predict the noise produced by the operating pumping station, staff proposes to set the limit for the pumping station nighttime hourly L_{eq} at the nearest receptor at 45 dBA. The applicant has agreed to house all pumping station noise producing equipment in a suitable noise reducing enclosure. The proposed noise limits for the power plant and pumping station are specified in Condition of Certification **NOISE-6** in the FSA.

COMPLIANCE WITH LORS

Conditions for compliance with LORS have been specified in the FSA.

COORDINATION WITH OTHER AGENCIES

Coordination with other agencies has been discussed in the FSA.

CONCLUSIONS

This document addresses the addition of a pipeline between the TWWTP and the TPP, a distance of approximately 11 miles. This pipeline traverses farmland with occasional farm houses near the route. The number of residents is few and most are at least ½-mile from the pipeline route. The residents near the pipeline route would obviously be impacted by noise to some extent during construction, but on a very limited basis; construction of the pipeline would progress rapidly, thus the impact by noise would be transitory in nature. Construction activity would consist of trench digging and trucks hauling dirt from the route. After construction is completed, the only noise source would be the pumping station, and this source would be enclosed.

PROPOSED CONDITIONS OF CERTIFICATION

Conditions of Certification are specified in the FSA.

REFERENCES

References are the same as those in the FSA.

PUBLIC HEALTH

Testimony of Alvin J. Greenberg Ph.D.

INTRODUCTION

The purpose of this analysis is to evaluate the Reclaimed Water Supply Pipeline for potentially significant public health impacts. Any public health impacts from construction and operation of this pipeline would result from exposure to any toxic constituents posing cancer and non-cancer risks. The potential for such impacts would depend on the concentrations of such toxicants emitted from construction equipment used to build the pipeline or from pumps along the route used to move the wastewater to the facility.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Please refer to the LORS listed in the **Public Health** section of the Tesla Power Plant (TPP) Final Staff Assessment (FSA).

ANALYSIS

The City of Tracy Wastewater Treatment Plant is located approximately eight miles east of TPP near the intersection of Arbor Avenue and Holly Drive, north of the City of Tracy. A pumping station would be necessary at the wastewater treatment plant and a second pumping station would be required along the 11-mile pipeline route.

PROJECT IMPACTS AND MITIGATION

Impacts for the construction of any pumping stations and a water pipeline of any length would be minimal and short-term. Emissions from construction equipment would not be significant as the emissions would be short term. Pumping recycled water to the power plant site would be accomplished with electric pumps, therefore, no offsite operational emissions are expected.

During pipeline construction, disturbances along the pipeline route will occur from excavation, grading, and earth moving. Such activities have the potential to adversely affect public health through various mechanisms, such as the creation of airborne dust, material being carried off-site through soil erosion, and uncovering buried hazardous substances.

A Phase I and an interim Phase II Environmental Site Assessments have been prepared by staff for the pipeline route and can be found as Attachments 1 and 2 to this report. The purpose of an ESA is to determine the potential for the presence or likely presence of any hazardous substances or petroleum products under conditions that may indicate a release or threat of a release from present or past activities. The Phase II ESA found that more than 80% of the pipeline route traverses rural county road right-of-way, less than 20% of the pipeline route traverses agricultural lands, and about 5% of the route occurs adjacent to lands zoned light industrial. Due to the use of pesticides on agricultural lands, the Phase I ESA recommends that a Phase II Environmental Site Assessment be prepared for a few segments of the proposed pipeline route, including at

least one representative parcel of agricultural land in each of three agricultural segments of the route and the one segment adjacent to the industrial park.

The Phase II ESA prepared by staff is termed an “interim assessment” because it did not address portions of pipeline route segment 3A due to the refusal of the land owner to allow access to the segment to obtain samples. The Interim Phase II FSA found that all samples, except one, had results of non-detect levels for arsenic and target pesticide/herbicides. One composite sample showed detectable levels of 240 ppb Dichlorodiphenyl-dichloroethylene (DDE) and thus the discrete individual samples were analyzed. The discrete samples showed non-detect and thus no further analysis was warranted. Arsenic levels ranged from 3.6 mg/kg (ppm) to 6.9 mg/kg and are considered to be background for the state of California. The Phase II ESA therefore concluded that trenching and excavation work along the proposed pipeline route within the segments assessed would not likely encounter significant concentration of either pesticides or arsenic so as to render the soils hazardous waste or which would pose any significant risk to workers or the public. The Phase II ESA also recommended that the final parcels of segment 3A be sampled and analyzed prior to excavation activities.

COMPLIANCE WITH LORS

Energy Commission staff concludes that the TPP would be able to comply with all applicable LORS regarding public health during construction and operation of the reclaimed water pipeline.

COORDINATION WITH OTHER AGENCIES

No coordination with other agencies regarding public health issues is necessary for the reclaimed water pipeline.

CONCLUSIONS

Minimal risk to public health would occur from the construction and operation of the reclaimed water pipeline if routine preventive measures are implemented.

PROPOSED CONDITIONS OF CERTIFICATION

Please refer to the Condition of Certification in the **Public Health** section of the TPP FSA.

SOCIOECONOMIC RESOURCES

Testimony of Amanda Stennick

INTRODUCTION

The purpose of this analysis is to identify and examine the likely socioeconomic impacts from the construction and operation of staff's proposed Reclaimed Water Supply Pipeline for the Tesla Power Project (TPP) and to recommend mitigation to ensure that these impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

All LORS are as contained in the TPP Final Staff Assessment (FSA) published April 8, 2003.

ANALYSIS

The water pipeline project consists of construction of an 11-mile trench as described in the **Executive Summary**. Construction of the water pipeline and pump stations would be concurrent with construction of TPP. Pipeline construction would be performed by one or two crews at a time. Each crew size could vary from as few as six, to as many as 12, depending on conditions. The larger crew would be needed in conditions requiring flagmen for traffic control and dump trucks for hauling and returning excavated soils in areas where the laydown area is narrow. In addition to the pipeline crew(s), there may be another crew consisting of about six people, for installation of the two pump stations.

Because of the proposed project location, staff does not expect any businesses to be affected by the construction of the water pipeline and pump stations. Staff does not expect any socioeconomic impacts to farm production or farming activity due to pipeline construction. Additionally, staff reviewed the proposed pipeline route and finds that construction activity staffing would be minimal and of limited duration. Therefore, staff believes that the socioeconomic impacts from construction of the Reclaimed Water Pipeline would be less than significant.

COMPLIANCE WITH LORS

Conditions for compliance with LORS have been specified in the FSA.

COORDINATION WITH OTHER AGENCIES

Coordination with other agencies has been discussed in the FSA.

CONCLUSIONS

This document addresses the addition of a pipeline between the Tracy Wastewater Treatment Plant and the TPP, a distance of approximately 11 miles. This pipeline traverses farmland with occasional farm houses near the route. Construction activity would consist of trench digging and trucks hauling dirt from the route and would require between 18 and 30 people. Due to the small number of workers and short duration of the reclaimed water pipeline construction, staff finds that the socioeconomic impacts would be less than significant.

PROPOSED CONDITIONS OF CERTIFICATION

Conditions of Certification are specified in the FSA.

REFERENCES

References are the same as those in the FSA.

TRAFFIC AND TRANSPORTATION

Testimony of Steven Brown, P.E.

INTRODUCTION

The purpose of this analysis is to identify and examine the likely traffic and circulation impacts from the construction and operation of the staff proposed Reclaimed Water Supply Pipeline for the Tesla Power Project (TPP) and to recommend mitigation to ensure that these impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

All LORS are as contained in the TPP Final Staff Assessment (FSA) published April 8, 2003.

ANALYSIS

The water pipeline project consists of construction of an 11-mile trench as described in the **Executive Summary**. Construction of the water pipeline and pump stations would be concurrent with construction of TPP. One or two crews would perform pipeline construction at a time. Each crew size could vary from as few as six, to as many as 12, depending on conditions. The larger crew would be needed in conditions requiring flagmen for traffic control and dump trucks for hauling and returning excavated soils in areas where the laydown area is narrow. In addition to the pipeline crew(s), there may be another crew consisting of about six people, for installation of the two pump stations.

Because of the proposed project location, traffic impacts would be limited to construction-related activity and would not result in any material change to previously analyzed ongoing operations. Staff does not expect any significant, unmitigated traffic impacts due to pipeline construction.

IMPACTS AND MITIGATION

Staff has reviewed the proposed pipeline route and does not believe that additional traffic and circulation impacts would occur to as a result of the pipeline.

The FSA anticipates that underground utilities would be installed on Midway Road as well as other roadways in Alameda County and San Joaquin County. Conditions of Certification **TRANS-1**, **TRANS-3**, and **TRANS-7** are intended to mitigate any linear facility construction-related impacts, and these Conditions would be applicable to the reclaimed water pipeline route. Additional analysis and further mitigation are therefore not necessary.

COMPLIANCE WITH LORS

Conditions for compliance with LORS have been specified in the FSA.

COORDINATION WITH OTHER AGENCIES

Coordination with other agencies has been discussed in the FSA.

CONCLUSIONS

This document addresses the addition of a pipeline between the Tracy Wastewater Treatment Plant and the TPP, a distance of approximately 11 miles. This pipeline traverses farmland with occasional farmhouses near the route. Construction activity would consist of trench digging and trucks hauling dirt from the route and would require between 18 and 30 people. Due to the small number of workers and short duration of the reclaimed water pipeline construction, staff finds that the traffic and circulation impacts would be less than significant.

PROPOSED CONDITIONS OF CERTIFICATION

Conditions of Certification are specified in the FSA.

REFERENCES

References are the same as those in the FSA.

TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam

INTRODUCTION

The purpose of this analysis is to evaluate the Tesla Power Plant (TPP) Final Staff Assessment (FSA) Reclaimed Water Supply Pipeline in terms of potentially significant Transmission Line Safety and Nuisance (TLS&N) impacts.

LAWS, ORDIANCES, REGULATIONS, AND STANDARDS (LORS)

There are no LORS related to the TLS&N discipline for water supply pipelines.

ANALYSIS

The alternative pipeline would deliver reclaimed water to the site, via a new 11-mile pipeline, from the City of Tracy Wastewater Treatment Plant, in lieu of the fresh water supply from Rosedale-Rio Bravo Water Storage District proposed by the applicant.

This reclaimed water supply pipeline does not necessitate additional analysis or re-analysis of the project from a TLS&N perspective, as no electric transmission lines are associated with the pipeline.

COMPLIANCE WITH LORS

No LORS issues are associated with the TLS&N discipline for the alternative reclaimed water pipeline.

COORDINATUION WITH OTHER AGENCIES

No coordination regarding TLS&N is necessary with other agencies related to the pipeline.

CONCLUSIONS

Staff believes that the installation of the reclaimed water supply pipeline would not have any additional or adverse TLS&N impacts.

PROPOSED CONDITIONS OF CERTIFICATION

No new Conditions of Certification are required for TLS&N.

REFERENCES

References are the same as those in the FSA.

VISUAL RESOURCES

Testimony of Eric Knight

INTRODUCTION

The purpose of this analysis is to evaluate the visual impacts of the staff proposed Reclaimed Water Supply Pipeline to provide cooling water to the Tesla Power Project (TPP).

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The applicable LORS are the same as those reported in the Final Staff Assessment (FSA) (i.e., Alameda County East County Area Plan (as amended by Measure D) and the San Joaquin County General Plan). The reclaimed water pipeline would originate at the City of Tracy Wastewater Treatment Plant (TWWTP) and would traverse west across land within the City's corporate limits for approximately 0.5 mile before entering unincorporated San Joaquin County. Staff did not identify any visual resources related policies in the Tracy General Plan that would apply to the reclaimed water pipeline.

ANALYSIS

Except for two above ground water pumping stations, the reclaimed water supply pipeline would not be visible following installation because it would be underground. Thus, the primary visual impacts of the pipeline itself would be from temporary visual disturbances due to construction activities. Construction activities would be visible to a number of residences that are located along the proposed pipeline route.

A typical pipeline construction spread would include equipment such as bulldozers, backhoes, boom trucks, excavation diggers, material delivery trucks, welding trucks, and inspection vehicles. It is typical for most major pieces of equipment used to construct a pipeline to remain along the pipeline rights-of-way during construction. Construction would include site clearing and grading, trenching, construction of the actual pipeline, backfilling the trench, and cleanup and restoration of the rights-of-way. Typically, pipeline construction activities (from site preparation to restoration) could potentially be viewed from any one viewpoint (a residence for instance) for up to two weeks, with decreasing levels of visual clarity as the distance to construction activities increases. At the Delta Mendota Canal and California Aqueduct crossings, the pipeline would be constructed using jack and bore or horizontal directional drilling techniques. These activities may operate continuously for 24 hour periods and thus would require nighttime lighting. A pad and lay-down area at each end of drilling segment(s) would be required to accommodate the drilling equipment. Temporary construction disturbance along the pipeline route would average about 50 feet wide, for a total of 66.7 acres. No temporary or permanent access roads would be required. Due to the short-term nature of pipeline construction, the adverse visual impacts that would occur during construction would not be significant. However, this conclusion assumes the complete restoration of construction areas and rights-of-way, as required by staff's proposed Condition of Certification **VIS-4** in the FSA. In addition, Condition of Certification **VIS-3** in the FSA

(with one minor revision as proposed below) would ensure that construction lighting would not significantly impact any nearby residences.

Two pumping stations would be required to convey the reclaimed water to the TPP. One pumping station would be located at the TWWTP; the other would be located at one of two alternative sites. Site A (staff's preferred location, see **Executive Summary Figure 1**) would be located adjacent to Grant Line Road, along a segment between the undercrossing of the Byron Bethany Irrigation District Canal and the San Joaquin County/Alameda County line, prior to crossing the Delta Mendota Canal and California Aqueduct. Site B would be located on Midway Road, adjacent to the California Aqueduct, in the same general location as originally proposed by the applicant. Each pump station would require an area of about 0.1 acres to accommodate parking, a wet well (underground sump), and a small housing (approximately 10 feet wide by 10 feet long by 10 feet high) to cover pumping equipment and controls and to provide electrical service. Electrical service would be extended from existing power lines in the area of the two sites using wood poles and overhead line. At Site A, a transformer and one power pole of approximately 30 feet in height may need to be installed.

The pumping station that would be located at the TWWTP would blend in with existing buildings and structures and would have no impact on visual resources. Given its small size, the visual impacts of the pump station at either Site A or B would not cause significant adverse visual impacts. As proposed by the applicant in their AFC, the pump housing should be painted in an appropriate color and finish to blend the structure into the landscape. Staff's proposed Condition of Certification **VIS-1** in the FSA requires appropriate surface treatment of project structures visible to the public. **VIS-1** requires the project owner to submit a painting plan to Alameda County for review and comment. If Site A is chosen, the painting plan addressing the color and finish of the pump station housing should be submitted to San Joaquin County for review and comment. There are a number of residences in the area of alternative Site A. Depending on the final location selected at Site A, it may be necessary to plant informal groupings of shrubs around the pump station to soften its appearance if substantially visible from nearby residences. Staff proposes new Condition of Certification **VIS-7** to require landscape screening of the pump station at alternative Site A. If any exterior lighting is necessary, it should be designed in accordance with the measures specified in Condition of Certification **VIS-2** in the FSA.

IMPACTS AND MITIGATION

If constructed and operated in accordance with staff's proposed Conditions of Certification **VIS-1** through **VIS-4** in the FSA, and new Condition of Certification **VIS-7** proposed below, the visual impacts of the staff's alternative reclaimed water supply pipeline would be less than significant.

COMPLIANCE WITH LORS

The reclaimed water supply pipeline would be consistent with applicable visual resources related LORS. The San Joaquin County General Plan includes a policy which strives "to create a visually attractive County." If alternative Site A is selected,

San Joaquin County should be given an opportunity to review a painting plan for the pump station. Revisions to Condition of Certification **VIS-1** are proposed below.

COORDINATION WITH OTHER AGENCIES

Condition of Certification **VIS-1** requires the project owner to submit a plan for the treatment (painting) of project structures to Alameda County. Staff proposes that this condition be amended to require that a treatment plan for the pump station be submitted to San Joaquin County for review and comment if alternative Site A is selected as the location of the pump station.

CONCLUSIONS

If constructed and operated in accordance with staff's proposed Conditions of Certification **VIS-1** (as revised below), **VIS-2**, **VIS-3** (as revised below), and **VIS-4** in the FSA, and new Condition of Certification **VIS-7** (proposed below), the visual impacts of the staff's alternative reclaimed water supply pipeline would be less than significant.

PROPOSED CONDITIONS OF CERTIFICATION

Condition of Certification **VIS-1** in the FSA, paragraph 1, line 2, should be revised as follows to allow San Joaquin County the opportunity to review and comment on the color treatment plan for the pump station if alternative Site A is selected:

"The project owner shall submit a specific treatment plan, whose proper implementation will satisfy these requirements, for CPM review and approval and for Alameda County Community Development Agency and San Joaquin County (for the alternative Site A reclaimed water pipeline pump station only) review and comment.

Condition of Certification **VIS-3** in the FSA should be revised as follows to ensure that the condition applies to construction of the pipeline:

"**VIS-3** The project owner shall ensure that lighting for construction of the power-plant project is used in a manner that minimizes potential night lighting impacts…"

New Condition of Certification **VIS-7** is proposed as follows:

VIS-7 If alternative Site A is selected for the reclaimed water supply pump station, the project owner shall provide landscaping that is effective in screening the reclaimed water supply pump station from view from nearby residences. Shrubs consisting of informal groupings of fast-growing evergreens shall be strategically placed and of sufficient density and height to effectively screen the majority of the pump station as quickly as possible. The project owner shall submit a landscaping plan to the CPM for review and approval and to San Joaquin County for review and comment. The plan shall include:

a) A detailed landscape, grading, and irrigation plan, at a reasonable scale;

b) A detailed list of plants to be used, specifying their rates of growth and times to maturity and their proposed size and age at planting.

c) Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and

d) A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM. The planting must be completed by the start of commercial operation, and the planting must occur during the optimal planting season.

Verification: Prior to construction of the pump station and at least 90 days prior to installing the landscaping, the project owner shall submit the landscaping plan to the CPM for review and approval and to San Joaquin County for review and comment.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) within 30 days of receiving notification that revision is required.

The project owner shall notify the CPM within seven days after completing installation of the landscaping, that the landscaping is ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead vegetation, for the previous year of operation in each Annual Compliance Report.

REFERENCES

City of Tracy General Plan: An Urban Management Plan. July 19, 1993.

Other references are those in the Visual Resources section of the FSA..

WASTE MANAGEMENT

Testimony of Alvin J. Greenberg, Ph.D.

INTRODUCTION

The purpose of this analysis is to evaluate the Reclaimed Water Supply Pipeline for potentially significant waste management related impacts. Please refer to the **Waste Management** section of the Tesla Power Project (TPP) Final Staff Assessment (FSA) for discussions on contaminated soils and groundwater that specify appropriate mitigation measures and Conditions of Certification to ensure less than significant impacts.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Please refer to the LORS listed in the **Waste Management** section of the FSA.

ANALYSIS

The City of Tracy Wastewater Treatment Plant is located approximately eight miles east of TPP near the intersection of Arbor Avenue and Holly Drive, north of the City of Tracy. A pumping station would be necessary at the wastewater treatment plant and a second pumping station would be required along the 11-mile pipeline route.

PROJECT IMPACTS AND MITIGATION

In providing recycled wastewater from this source, there would be certain wastes associated with the construction and operation of the pumping facilities and the pipeline.

Excavation activities may encounter potentially contaminated soils and/or groundwater. Therefore, proper handling procedures may be necessary. A Phase I Environmental Site Assessment (ESA) has been prepared by staff for the pipeline route and can be found as Attachment 1 to this report. The Phase I ESA found that more than 80% of the pipeline route traverses rural county road right-of-way, less than 20% of the pipeline route traverses agricultural lands, and about 5% of the route occurs adjacent to lands zoned light industrial. Review of federal and state environmental records revealed the presence of a leaking underground storage tank and diesel/gasoline contamination of groundwater at an industrial property adjacent to the open field located between Holly Drive and Tracy Boulevard. A walk or drive of the entire pipeline route (with one exception as noted in the Phase I ESA due to inaccessibility) revealed very little observable signs of contamination. However, due to the use of pesticides on agricultural lands, the Phase I ESA recommends that a modified Phase II ESA be prepared for a few segments of the proposed pipeline route, including at least one representative parcel of agricultural land in each of three agricultural segments of the route and the one segment adjacent to the industrial park mentioned above.

An Interim Phase II ESA has been prepared by staff for the pipeline route and can be found as Attachment 2 to this report. This Phase II ESA is termed an “interim assessment” because it did not address portions of pipeline route segment 3A due to

the refusal of the land owner to allow access to the segment to obtain samples. The Interim Phase II ESA found that all samples, except one, had results of non-detect levels for arsenic and target pesticide/herbicides. One composite sample showed detectable levels of 240 ppb Dichlorodiphenyl-dichloroethylene (DDE) and thus the discrete individual samples were analyzed. The discrete samples showed nondetect and thus no further analysis was warranted. Arsenic levels ranged from 3.6 mg/kg (ppm) to 6.9 mg/kg and are considered to be background for the state of California. The Phase II ESA therefore concluded that trenching and excavation work along the proposed pipeline route within the assessed segments would not likely encounter significant concentrations of either pesticides or arsenic so as to render the soils hazardous waste or which would pose any significant risk to workers or public. The Phase II ESA also recommended that the final parcels of segment 3A be sampled and analyzed prior to excavation activities (see **WASTE-7**).

Staff also notes that the quantities of waste soils generated in pipeline excavation would be limited, so there is unlikely to be a significant impact on Class I landfills, given their existing large capacities. Please also refer to the **Waste Management** section of the FSA for discussion of contaminated soils and worker safety standards that specify appropriate mitigation measures and Conditions of Certification to ensure impacts on workers are less than significant.

Additionally, there would be minor amounts of hazardous and nonhazardous wastes generated during construction and operation of the pump stations and pipeline. These consist of routine construction/operations wastes such as building materials, gasoline and diesel fuel leaks, lubricants (oil and grease), oily rags, paper, wood, scrap metal, etc. These amounts would be minor and if handled in the same manner as that described for the project site, would present an insignificant risk to workers and the public.

COMPLIANCE WITH LORS

Energy Commission staff concludes that the TPP would be able to comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during construction and operation of the reclaimed water pipeline.

COORDINATION WITH OTHER AGENCIES

Because hazardous wastes would be produced during both project construction and operation of the TPP, a hazardous waste generator identification number from the California Department of Toxic Substances Control (DTSC) would be required.

CONCLUSIONS

Staff does not consider the waste management impacts from the reclaimed water pipeline to be significant since minor amounts of wastes would be generated.

PROPOSED CONDITIONS OF CERTIFICATION

The following condition of certification is proposed in addition to those listed in the FSA.

WASTE-7 The project owner shall test the remaining parcels of segment 3A of the pipeline route as described in the Interim Phase II Environmental Site Assessment (ESA) for pesticides and metals. The sampling and laboratory analysis shall be done according to procedures described in the Phase II ESA.

Verification: The project owner shall provide the sampling and laboratory results to the CPM for approval at least 30 days prior to the start of construction of the recycled water pipeline.

SOIL AND WATER RESOURCES

Testimony of Kristine Uhlman, John Kessler, and Tony Mediati

INTRODUCTION

This section evaluates the use of fresh water as an interim supply to support the Tesla Power Project (TPP) prior to the availability of reclaimed (recycled) water from the City of Tracy and potential effects from the construction of a recycled water pipeline. The City of Tracy is willing to deliver recycled water to the project in a new 11-mile long, 30-inch diameter pipeline. The City of Tracy is also willing to supply fresh water as an interim water supply through the recycled water pipeline should the TPP require water in 2005, before substantial completion of the improvements to the Tracy Wastewater Treatment Plant (TWWTP) scheduled for January 2006.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Please see the Final Staff Assessment (FSA) for a complete discussion of LORS related to soil and water resources. The paragraph below has been slightly modified from the FSA as a result of comments from Alameda County on the FSA.

The Alameda County Grading Department sets forth grading and erosion control requirements. County Ordinances 15.36.240 and 15.36.620 describe the requirements for the Grading, Erosion and Sediment Control Plans. County Ordinance 15.36.600 specifies that grading and earth-disturbing activities be limited to avoid the rainy season defined as October 1 to April 15. Grading Ordinance Chapter 15.36.530 and the Unified Building Code Section 3314 addresses cut and fill slopes and setbacks. In addition, the County sets storm water design criteria as specified in its Hydrology and Hydraulic Criteria Summary for Western Alameda County, and all roadway and storm drain facilities are to conform to Alameda County's Subdivision Design Guidelines and Hydrology and Hydraulic Design Criteria summary.

PROJECT DESCRIPTION

RECYCLED WATER PIPELINE

The recycled water pipeline would follow a route as shown in Figure 6 of Appendix A titled the "Water Resources FSA - Tesla Power Plant - Water Supply and Cooling Options." Beginning at a new pump station located immediately west of the existing effluent pumps at the TWWTP, the route and ground conditions are described as follows:

1) West and then north along the road inside the TWWTP facility. This road serves as a berm for the sludge drying beds to the intersection of Holly Drive and Arbor Avenue. Trenching and backfill would occur within the existing fill of the gravel-surfaced road.

2) Cross Holly Drive and west through a field within a public utility easement or dirt road to Tracy Boulevard. This property, which is being acquired by City of Tracy, is currently in agricultural production growing Alfalfa.

3) Cross Tracy Boulevard and west through a field within a public utility easement or dirt road to Corral Hollow Road. This property, which is being acquired by City of Tracy, is currently in agricultural production growing winter wheat.

4a) Cross and south on Corral Hollow Road for approximately 300 feet. Trenching and backfill would occur either within the shoulder and/or within Corral Hollow Road.

5a) West through a field consisting of two parcels within a public utility easement or dirt road if possible, to Naglee Road in approximate alignment with Middle Road located due west. This segment includes crossing a small local aqueduct serving irrigation water supply. The field is currently used for grazing livestock.

6) Cross Naglee Road and west on Middle Road to San Jose Road. Trenching and backfill would occur either within the shoulder and/or within Middle Road.

7) South on San Jose Road to its terminus at the Southern Pacific Railway. Trenching and backfill would occur either within the shoulder and/or within San Jose Road. Two small irrigation ditches would also be crossed at the terminus of San Jose Road.

8) Cross under the Southern Pacific Railway and cross Byron Road, and proceed west on Grant Line Road; the pipeline under the railway would likely be installed by jack and bore techniques.

9) Cross under or over the Delta Mendota Canal and the California Aqueduct (requiring approvals from USBR and DWR). If under-crossings are constructed, they would be installed by either jack and bore or horizontal directional drilling techniques.

10) South on Midway Road immediately west of the California Aqueduct. Trenching and backfill would occur either within the shoulder and/or within Midway Road.

11) Continue south on Midway Road to the TPP site. Trenching and backfill would occur either within the shoulder and/or within Midway Road.

As an alternative to the segments listed in 4a and 5a, the recycled water pipeline could follow a slightly different path in the section between Corral Hollow and Naglee Roads, described as follows:

4b) Cross and south on Corral Hollow Road for approximately 1,300 feet.

5b) West on Larch Road and North on Naglee Road to the intersection with Middle Road. Trenching and backfill would occur either within the shoulder and/or within the roadways.

The recycled water pipeline would be constructed within appropriate rights-of-way. Along paved roads, the pipeline would be constructed preferably along the shoulder, so as to work within the existing road easement and areas already affected by the road. This would also avoid or minimize disturbance to vehicle travel. Through agricultural fields, the pipeline would be constructed within existing public utility easements or within or along the shoulder of agricultural access roads wherever possible. The pipeline

would require several road crossings, for which construction of 2 – 5 days duration would be staged to allow vehicle traffic to share a minimum of a single lane. The trench dimensions would generally be about 5 feet wide by 6 feet deep. At the Delta Mendota Canal and California Aqueduct crossings, the pipeline would be constructed using jack and bore or horizontal directional drilling techniques. This would require a pad and laydown area at each end of the drilling segment(s). Temporary construction disturbance along the pipeline route would average about 50 feet wide, for a total of 66.7 acres. Along the recycled water pipeline route, the surface would be restored to existing conditions. No new permanent access roads would be required.

RECYCLED WATER PUMP STATIONS

Recycled water, and possibly fresh water as an interim supply in 2005, would be conveyed in generally a westerly direction from the TWWTP to the TPP. Conveyance of the treated wastewater would be accomplished using two pump stations. The first pump station would be located at the TWWTP immediately west of the existing effluent pumps and chlorine contact basins. The second pump station would be located at one of two alternative sites. Site A would be located adjacent to Grant Line Road, along a segment between the under-crossing of the Byron Bethany Irrigation District Canal and the border of Alameda and San Joaquin Counties, prior to crossing the Delta Mendota Canal and California Aqueduct. Site B would be located on Midway Road, adjacent to the California Aqueduct, in the same general location as originally proposed by the applicant. Initially Site A is preferred to Site B. Each pump station would require an area of about 0.1 acre to accommodate parking, a wet well (underground sump), small housing to cover pumping equipment and controls, and to provide electrical service. Electrical service would be extended using wood poles and overhead line (CEC 2003a).

SOILS

The recycled water pipeline would follow the same route proposed by the applicant from the power plant along Midway Road to the California Aqueduct. The route chosen for analysis by staff from the aqueduct to the TWWTP and pump stations would be located on soils classified primarily as Clay and Clay Loam. Characteristics of these soil types are listed below.

Soil & Water Resources Table 1
Soil Characteristics

Soil Name	slope	Depth	Permeability	Drainage	Texture	Erosion Hazard Rating
Capay Clay	0-2%	60 inches	Slow	Moderately well drained	Clay	Slight
Capay Clay	2-5%	60 inches	Slow	Moderately well drained	Clay	Slight
Egbert Silty Clay Loam	0-2%	60 inches	Slow	Poorly drained	Silty Clay Loam	Slight
Pescadaro Clay Loam	0-2%	60 inches	Very Slow	Poorly drained	Clay Loam	Slight
Stomar Clay Loam	0-2%	60 inches	Slow	Well Drained	Clay Loam	Slight
Willows Clay	0-2%	60 inches	Very Slow	Poorly drained	Clay	Slight

Source: Soil Survey of San Joaquin County, California, USDA, SCS.

CITY OF TRACY'S RECYCLED WATER SUPPLY

The City of Tracy is proposing to establish its recycled water program in accordance with Title 22 standards by initiating service to the TPP. In support of its recycled water program, the City of Tracy is in the process of upgrading its wastewater treatment plant from secondary to tertiary treatment standards, as well as increasing its capacity from 9.0 to 10.8 million gallons per day (MGD).

The City of Tracy is scheduled to produce tertiary-treated wastewater by 2006. In the event the TPP is constructed in 2005 prior to the availability of recycled water (scheduled for January 2006), the City of Tracy would deliver fresh water to the project via the recycled water pipeline as an interim water supply. The potential duration of the interim water supply is from about April through December of 2005, and is not expected to exceed one year (Tracy, 2003a). Under this scenario, the projected maximum use of recycled and fresh water is as shown in **Soil & Water Resources Table 2**.

Soil & Water Resources Table 2
Projected TPP Use of Recycled and Fresh Water by Year (AFY)

Year	Recycled Water	Fresh Water	Total
2005	0	4,200	4,200
2006	5,851	0	5,851
2007 & thereafter	5,851	0	5,851

Note: Total annual demand represents the maximum annual demand of 5,851 Acre Feet per Year (AFY), other than in 2005 when water use would be less due to construction, system testing and startup procedures.

To meet the average of 4,200 AFY for the 2005 interim supply, ground water from the existing Tracy potable supply is proposed to be transported by the recycled water pipeline to the TPP. An average of 3.8 MGD would be required during the months of operation. Water consumptive use, however, peaks during the hot summer months and for that reason the interim supply must be able to meet the TPP peak demand. An estimated 8.3 MGD is calculated as necessary to meet maximum demand.

CHANGE IN DISCHARGE AND USE FOR TRACY'S TREATED WASTEWATER

The City of Tracy currently discharges its treated wastewater to Old River as permitted by the Central Valley Regional Water Quality Control Board under its NPDES Permit. Old River is a tributary to the San Joaquin River, and also serves as the point of diversion for both the California Aqueduct of the State Water Project (SWP) and the Delta Mendota Canal of the federal Central Valley Project (CVP). Municipal water supplies are also withdrawn from Old River such as those serving Contra Costa Water District. Flow and water quality in Old River is highly influenced by seasonal runoff from the San Joaquin and Sacramento Rivers, and rates of diversion for the SWP and CVP. The Sacramento and San Joaquin Rivers are the primary rivers of the state, collecting runoff from smaller rivers of the northern and central Sierra Nevada range and other inland drainages, joining together among a myriad of sloughs in the San Francisco Bay Delta, and discharging through the bay into the Pacific Ocean. Delta flow and water quality, including that in Old River, is also highly influenced by ocean tidal patterns depending on the rate of fresh water seasonal flows. The volume of flow in Old River is approximately 340 cfs in June through September during critically dry years and far greater during other months and normal or wet years (City of Tracy EIR, 2002).

State Water Resources Control Board Decision 1641 specifies flow and water quality standards for the Delta, balancing the use of the state's waters for consumptive use and environmental protection of threatened and endangered aquatic species, as it pertains to the operation of the SWP and CVP. The direction of flow, water level and water quality is also managed by the placement of barriers at various locations in the Delta. The primary water quality standard managed by the projects is salinity. Treated wastewater discharged by the City of Tracy into Old River attributes to water quality degradation, when comparing the average salinity (indicated by Total Dissolved Solids (TDS)) of the City's effluent of about 1,000 mg/l to the typical salinity of water drawn into the SWP ranging from about 200 – 450 mg/l.

The potential change in the quantity of treated wastewater discharged by the City into Old River is best reflected as a projection with or without the effect of serving TPP recycled water as shown in **Soil & Water Resources Table 3**.

Soil & Water Resources Table 3
Projection of City of Tracy's Treated Wastewater Discharge to Old River
Average Dry Weather Flow (mgd)

Description	2002	2006	2010	2014	2018
Total TWWTP Discharge	**7.2**	**9.5**	**11.5**	**13.5**	**15.5**
TPP Average Daily Water Demand	0	4.6	4.6	4.6	4.6
Net TWWTP Discharge less TPP Average Daily Demands	**7.2**	**4.9**	**6.9**	**8.9**	**10.9**
TPP Peak Daily Water Demand	0	8.3	8.3	8.3	8.3
Net TWWTP Discharge less TPP Peak Daily Demands	**7.2**	**1.2**	**3.2**	**5.2**	**7.2**

(Reference: City of Tracy, 2001)

Based on TPP's average daily water demands, the daily discharge of the TWWTP would be reduced from its existing average dry weather flow of 7.2 mgd (11.14 cfs) in 2002 to 4.9 mgd (7.58 cfs) in 2006 (the first full year of projected TPP operation) and would progressively increase and recover to its existing 7.2 mgd discharge within about 5 years (in 2011). Under the average daily TPP demand scenario, the reduction in discharge of 4.6 mgd equates to about 7 cfs less flow in Old River, compared to its estimated summer flow rate of 340 cfs during critically dry years.

Based on TPP's peak daily water demands, the daily discharge of the TWWTP would be reduced from its existing average dry weather flow of 7. 2 mgd (11.14 cfs) in 2002 to 1.2 mgd (1.86 cfs) in 2006 (the first full year of projected TPP operation) and would progressively increase and recover to its existing 7.2 mgd discharge within about 12 years (in 2018). Under the peak daily TPP demand scenario, the greatest daily reduction in discharge of 8.3 mgd (12.84 cfs) equates to about 3.8 percent less flow in Old River during critically dry flows.

HYDROLOGIC SETTING

San Joaquin County is located within California's Central Valley, which runs north-south and is bordered by the Sierra Nevada Mountain range to the east and the Coastal Range to the west. Rivers in the Central Valley flow towards the Sacramento / San Joaquin Delta, which drains to the San Francisco Bay. Rivers within the San Joaquin County include the Mokelume, Calaveras, Stanislaus, San Joaquin and the Old River; Tracy is located within the Delta area of the San Joaquin River. A maze of streams, canals and sloughs are found across the western-most portion of the County. The Central Valley surface water generally flows towards the Delta and has one natural surface water outlet, the Carquinez Strait located east of San Francisco Bay (Bertoldi, et al, 1991; CDWR, 1998), and then on to the Pacific Ocean.

Tracy lies along the western border of the San Joaquin Valley, with ground surface elevations ranging from 9 feet above mean sea level (MSL) at the northern boundary of the current urban limit, to 600 feet above MSL in the foothills along the southwestern

boundary. Tracy lies adjacent to the State Water Project California Aqueduct and the Delta Mendota Canal, the latter of which currently supplies Tracy with its surface water. The Old River flows east to west and is located north of Tracy, and receives the City's treated wastewater discharges (City of Tracy, 2002).

GROUND WATER RESOURCES

Thousands of feet of alluvial sediment have been deposited within the 400-mile long and 50 mile-wide Central Valley. To the east are the Sierra Nevada Mountains which are comprised of pre-Tertiary igneous and metamorphic rocks. The Coastal Range to the west is comprised of pre-Tertiary and Tertiary semi-consolidated to consolidated marine sedimentary rocks. The geologic formations within the Central Valley and San Joaquin County are grouped as either originating from erosion of the east-side or west-side formations, based on their location relative to the San Joaquin River.

During the middle Cretaceous Period, parts of the Central Valley were inundated by the Pacific Ocean, resulting in deposition of marine deposits, with marine conditions persisting into the middle Tertiary times after which the sediments changed from marine to continental. The material sources for the continental deposits are the Coastal Ranges and the Sierra Nevada, depositing fluvial and some interbedded lacustrine deposits and some volcanic material to the east of Tracy (Bertoldi, et al, 1991; Sneed, 2001).

Under pre-development conditions, ground water flowed from the natural recharge areas along the perimeter of the Central Valley towards the low areas along the San Joaquin River, with the natural ground water and surface water discharge through the Delta to San Francisco Bay.

Beginning in 1850, development of the ground water resource to support agriculture reversed ground water flow directions and created a significant cone of ground water depression west of the City of Stockton in the western portion of San Joaquin County. Regional ground water flow now converges to this low point, reversing the historic flow from the Bay Delta towards Stockton. This eastward flow form the Delta area is significant because of the typically poorer quality, saline water being pulled into the fresh-water aquifer due to the ground water gradient reversal (CDM, 2001).

San Joaquin Valley Basin

San Joaquin County has a long history of ground water overdraft, with the eastern portion of the county exhibiting the greatest ground water declines. The principal aquifer is the Tulare Formation which consists primarily of continental semiconsolidated clay, sand, and gravel, and extends to an average depth of 2,400 feet below land surface (Bertoldi, et al, 1991). The Tulare Formation is a heterogeneous aquifer that contains varying vertical leakance and confinement depending on the properties of fine-grained sediments, and consists of numerous overlapping and discontinuous clay beds. In the Tracy area, a greater portion of marine sediments are present due to its location to the west of the San Joaquin River. The Corcoran Clay member divides the Tulare Formation into upper and lower units. The Corcoran Clay is a relatively impermeable confining lacustrine deposit varying in thickness from 0 to 150 feet, with the eastern-most limit near the San Joaquin River.

Ground water quality is generally poor in the area west of the San Joaquin River due to contact with marine sediments during recharge along the Coastal Range, high-saline water at depth, and historic salt water intrusion from the Bay and Delta. Salinity intrusion into the Delta has extended as far east and south as Robers Island – approximately midway between Stockton and Manteca (CDM, 2001), and northeast of Tracy.

Tracy Basin

The Delta area consists of flood basin deposits which store poor quality saline water, however, Tracy is located on the margins of interfingering alluvial and fluvial sedimentary deposits of the Tulare Formation. In the Tracy area, the Tulare Formation is characterized by a layer of the low permeability Corcoran Clay that divides the aquifer into a lower confined aquifer and an upper aquifer that is locally unconfined, semi-confined, or confined. The upper aquifer of the Tulare Formation produces low quality water impacted by irrigation tail water seepage, the influx of shallow saline water from the Bay, and environmentally impacted ground water, such as the contaminants associated with the Tracy Defense Depot located 1.5 miles to the southwest of the urban area (USEPA, 2003).

The discontinuously bedded gravelly alluvium found in the lower portion of the aquifer produces the relatively higher quality water used by the City of Tracy.

Recent well logs from the Tracy area characterize the Corcoran Clay at approximately 400 feet below land surface with a thickness of 80 feet, and the water supply wells are typically installed below the clay (although some older wells straddle the clay layer, pulling water from both the upper and lower Tulare Formation). Multiple screen depths are typical, with screened intervals starting at about 500 to 650 feet below land surface, to a total depth of approximately 1,200 feet. Wells are reported to be capable of producing 2,000 to 3,000 gallons per minute (GPM) (City of Tracy, 2003; West Yost, 2003).

TRACY URBAN WATER SUPPLY

Historically, both the urban and agricultural areas of Tracy primarily used ground water, but within the past 25 years surface water supplies have been blended with ground water, with an average of 56% of the water needs met by surface water in 1999, as shown in **Soil & Water Resources Table 4**. The percentage volume of surface water mixed with ground water appears to reflect the blending constraints to meet water quality and atheistic requirements.

Soil & Water Resources Table 4
1999 City of Tracy Water Sources

Water Source (%)	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Overall
Well Water	100	70	34	31	37	41	45	41	30	38	48	38	44
Surface Water	0	30	66	69	63	59	55	59	70	62	52	62	56

Source: City of Tracy Official Web Site (http://www.ci.tracy.ca.us), April 14, 2003

The City of Tracy Department of Public Works provides water to the City's approximately 48,000 residents, as well as about 400 residents of the Larch-Clover County Services District. The City of Tracy is expected to grow rapidly in the upcoming years, as indicated by predictions the population will rise to 85,000 people by the year 2010 (CDM, 2001).

The City of Tracy's current maximum annual water supply amounts to over 19,000 AFY from a number of sources including the U.S. Bureau of Reclamation (USBR), ground water, and purchased surface water. The City of Tracy's contract with the USBR is to receive up to 10,000 acre-feet/year (AFY) of water from the Central Valley Project through the Delta-Mendota Canal. The Bureau can reduce this amount during dry years, and the City of Tracy typically takes only 7,500 – 9,000 AFY (City of Tracy, 2002).

Surface water supplies are augmented with ground water, and various studies have calculated sustainable pumping rates for the local aquifer. Early ground water studies have indicated the safe yield for the aquifer is 6,000 AFY (CDM, 2001, Vol.2, Section 3). The maximum recommended ground water extraction rate for the City was then estimated to be approximately 6,700 AFY. A ground water study completed in April of 2001 revised that figure upward, recommending an average annual operational ground water yield of 9,000 AFY (Bookman-Edmonston, 2001). This allotment volume was implemented as part of the Ground Water Management Policy adopted by the City Council in May of 2001 (City of Tracy, 2002).

Given the current sources of water, the minimum supply available to Tracy is the allowable yield from the aquifer (calculated at approximately 9,000 AFY) and the available portion of the 10,000 AFY USBR allotment. The surface water allotment can be reduced significantly during severe drought conditions. Historically, the most severe cutback occurred during the drought of the early 1990's when the USBR reduced the City of Tracy's allotment by 75%, to 2,250 AFY. Additional USBR water was allocated under hardship requisition, bringing the total to 5,000 AFY. Other sources of water are presumed to be available through independent contracts during drought conditions (City of Tracy, 2002).

In the future, the City of Tracy plans to eliminate ground water usage except in emergency situations. To meet future demands, the City of Tracy is in the process of securing other surface water sources and planning to implement an aquifer storage and

recovery program to store water obtained during years of high flow and abundant surface supply in the aquifer. (CDM, 2001).

These new sources would include the South County Surface Water Supply Project, which is expected to provide an additional 10,000 AFY beginning in 2005. The project has been reviewed under CEQA, and its EIR certified. The project has been designed and construction bids received. In addition, the City of Tracy has negotiated purchase agreements with Banta-Carbona and West Side Irrigation Districts for acquiring portions of their USBR contracts for an additional amount of 10,000 AFY. The CEQA/NEPA documents are currently being prepared, and the water supply is projected to be available by 2004.

In the remote event that new water supplies do not develop by 2005, and the City of Tracy is limited to only its existing resources, the City would opt to withdraw up to an additional 4,200 AFY from ground water for supply to the TPP (City of Tracy, 2003a). This quantity is based on the applicant's estimated demand during its projected completion of construction and operational startup in 2005.

AQUIFER SAFE YIELD / OPERATIONAL YIELD

Municipal pumping by the City of Tracy averages about 5,200 AFY from nine wells – the average well production capacity is 560 gpm. Based on historical data there appears to be a linear response by ground water elevations to pumping rates, with a 40 foot decline in the water table elevation in response to pumping at a rate of 5,000 AFY (Brookman-Edmonston, 2001).

Analysis of historical pumping data and correlation to ground water elevations resulted in an estimate in the Bookman-Edmonston Study (2001) of an aquifer 'operational yield' of about 9,000 AFY. The authors characterize 'operational yield' as that volume of ground water withdrawal that would likely not impact operation of existing wells. With an estimated withdrawal of 9,000 AFY the ground water is assumed to drop no more than 10 feet deeper than current levels, which suggests that the 9,000 AFY may not be a sustainable safe yield rate of extraction.

Prior to the issuance of the Bookman-Edmonston report (2001) past pumping by the City of Tracy had not exceeded 6,700 AFY – with the issuance of the report, pumping increased to the highest reported rate of 7,987 AF in the year 2001.

In addition to the calculation of an operational yield of the Tracy aquifer, the Bookman-Edmonston report (2001) reports an observation that ground water elevations increased while the City of Tracy was pumping "as much as about 5,600 AFY" but the elevations were not correlated to precipitation/recharge that may have occurred during the same period. It should also be noted that the study did not quantify the aquifer response to drought or periods of increased recharge.

The safe, sustainable rate at which the Tracy aquifer can be pumped will be realized as the aquifer is managed and data collected. As part of the implementation of the City of Tracy Urban Water Management Plan and Mitigated Negative Declaration on May 24, 2001, certain mitigation requirements must be followed in order to increase the ground

water extraction rate from 6,700 AFY to 9,000 AFY. The Management and Mitigation plans calls for the monitoring of ground water elevation and water quality, the installation of ground water monitoring wells, and the installation of land subsidence monitoring network. As more data becomes available, the response of the aquifer to increased extraction will be assessed and reported (City of Tracy, 2003c). This reporting began in January of 2001, and will provide sufficient data by which to calculate a safe sustainable yield of the aquifer as more data is obtained.

WATER DEMAND

The January 21, 2003 Water Inventory Report reported that the City of Tracy had a water demand of 15,680 AF during the year 2002. The year was considered a 'dry' year so water demand was estimated to be 7% more than estimated for a normal year. The report states that the City of Tracy has a maximum supply of 19,517 AF during wet years (when USBR contracts are not curtailed). The City of Tracy has pending urban development plans that, when constructed, will increase the City's water demand to approximately 22,486 AFY. The City of Tracy expects to purchase additional water to meet this demand. The Water Inventory Report estimated demand of approximately 16,400 AF for the year 2005 (City of Tracy, 2003c).

WATER QUALITY

There are water quality problems associated with both the surface water and ground water supplies in the City of Tracy. Surface water supplies for the City of Tracy come from the Delta and are high in bromide and organic matter, which produce undesirable disinfection by-products when combined with chlorine (CDM, 2001).

The City of Tracy's ground water is chlorinated before it enters the distribution system, and does not undergo any additional treatment. The ground water has high levels of total dissolved solids (TDS) and sulfates, which can result in an objectionable taste. The City mitigates this problem by blending the ground water with surface water.

The 2003 water inventory report (City of Tracy 2003c) provided data on the water quality and ground water production since the implementation of the Monitoring Mitigation plan. Ground water total dissolved solids (a measure of salinity) varied between approximately 500 to nearly 900 mg/L in 9 wells. Nitrates range between 0.5 to 2.5 mg/L in 7 wells. Nitrate concentrations less than 3 mg/L may be naturally occurring (Hem, 1985). Two wells reported nitrates between 3 and 5.5 mg/L, indicative of mixing with shallow aquifer water impacted by agricultural sources of nitrate (the Wainwright well, which collapsed in November of 2001, and Well 4).

Naturally occurring boron, a chemical constituent associated with waters recharged into the San Joaquin Valley along the marine sediments of the Coast Range, was present in concentrations 0.5 to 2.5 mg/L; concentrations greater than 4 mg/L are toxic to most plants, with concentrations as low as 0.75 mg/L capable of limiting plant growth. Sulfate was reported to range from approximately 100 to nearly 300 mg/L, again indicative of ground water quality expected in the deeper portion of the aquifer. A rotten-egg odor of hydrogen sulfide can be detected in waters that have only a few tenths of a mg/L of SO4 in solution, and concentrations greater than 100 mg/L are considered high (Hem, 1985).

The water quality problems associated with the Tracy area ground water would not adversely impact the operation of the TPP. However, the concentration and chemical constituents of the source water will determine the constituents and volume of the solid waste produced by the zero liquid discharge system.

IMPACTS AND MITIGATION

SOILS

Accelerated wind and water-induced erosion may result from earthmoving activities associated with construction of the recycled water pipeline and pump stations. Activities that expose and disturb the soil leave soil particles vulnerable to detachment by wind and water. High winds, prolonged periods of precipitation, or high intensity and short duration runoff events coupled with earth disturbance activities can result in on-site erosion eventually increasing the sediment load within nearby receiving waters. Effects that construction can have on soil resources include increased soil erosion, soil compaction, loss of soil productivity, and disturbance of saturated soils. Soil erosion results in the loss of topsoil and increases sedimentation of surface waters downstream of the site. The magnitude, extent and duration of this impact would depend on several factors, including the proximity of the site to surface water, the soils affected, and the method, duration, and time of year of activities, such as construction. Implementing appropriate erosion control measures will help maintain soil resources, water quality, protect property from erosion damage, and prevent accelerated soil loss.

Because the recycled water pipeline would be installed in ground that is relatively flat or gently sloped, the erosion factor for the clay loam type soil along the pipeline alignment is only slightly to moderately susceptible to erosion. Establishing appropriate BMPs for erosion control are necessary. Preliminary Grading, Drainage and Erosion Control Plans have been prepared by the applicant for similar linear facilities and reviewed by staff. BMPs for erosion control will be implemented during construction and further described in the applicant's site specific Sediment and Erosion Control Plan and the Storm Water Pollution Prevention Plan (SWPPP). These plans would be approved by the Energy Commission Compliance Project Manager (CPM) prior to any earthmoving activities. Approval and implementation of these plans will mitigate erosion and sedimentation impacts to less than significant levels and will be consistent with the Clean Water Act, Central Valley Regional Water Quality Control Board, Alameda County, and San Joaquin County LORS. **Condition of Certification SOIL & WATER-1** requires the applicant to submit a Sedimentation and Erosion Control Plan for review and comment by Alameda and San Joaquin Counties, and for review and approval by the CPM prior to initiating site mobilization activities. **Condition of Certification SOIL & WATER-2** requires the applicant to submit a Storm Water Pollution Prevention Plan for construction of the entire project for review and approval by the CPM prior to initiating site mobilization. Mitigation to avoid significant adverse impacts to soils and water resources will be addressed in the Sediment and Erosion Control Plan and the Storm Water Pollution Prevention Plan (SWPPP), and will include the following:

- Stabilizing disturbed areas and salvaging and replacing topsoil to areas that will not be covered with gravel or paving;
- Limiting soil erosion/dust generation by wetting active construction areas with water (including roads) or by applying commercial dust palliatives (soil binders);
- Placing excavated material away from active surface water drainage paths; the excavated soil shall be covered with a liner or anchored mulch. Areas disturbed during construction will be stabilized with vegetation where appropriate upon completion.
- Developing site-specific BMPS for all pipeline and pumping station construction and clearly identifying these plans on the drawings (as applicable for all segments of the pipeline, jack & bore and/or horizontal directional drilling activities and staging areas).
- Conducting visual post-construction monitoring of areas that were disturbed during construction phase, particularly noting any erosion prone areas; as necessary, corrective measures will be implemented in areas that do not respond adequately to initial stabilization techniques or in areas where accelerated erosion is occurring.
- In agricultural areas, constructing pipelines at a depth that will minimize land use conflicts and during a schedule where practical, to avoid impacts to cultivated areas.

CHANGE IN DISCHARGE AND USE FOR TRACY'S TREATED WASTEWATER

The quality of water in Old River would slightly improve as a result of reducing the quantity of discharge of treated wastewater from City of Tracy's wastewater treatment plant. The reduction would be realized by recycling a portion of the effluent for reuse by TPP. In particular, the City's discharge would not incrementally contribute to increasing salinity (as indicated by the concentration of total dissolved solids - TDS). Salinity in Old River varies from about 200 – 475 mg/l compared to the City's wastewater, which averages about 1,000 mg/l. Other slight improvements in water quality would result from potential reductions of introducing microorganisms such as giardia and cryptosporidium, which are not eliminated under existing or planned wastewater treatment processes. The Central Valley Regional Water Quality Control Board, National Marine Fisheries Service and Contra Costa Water District, highly encourage the reduction in discharge of the City's wastewater into Old River. (CVRWQCB 2002a, CCWD 2003, NMFS 2003)

In reference to **Soil & Water Resources Table 2**, the potential change in the quantity of treated wastewater discharged by the City into Old River is not considered significant. During seasons when hydrologic conditions are driest, the reduction of treated wastewater flow discharged to Old River of 7 –13 cfs, varying according to average vs. peak day demands by TPP respectively, would only result in a 2.1 - 3.8 percent decrease in total average daily flow in Old River. Further, the reduction would only be temporary, varying from about 5 – 12 years before the City's discharge of treated wastewater effluent is projected to resume at a rate greater than or equal to the existing average dry weather flow of 7.2 mgd.

GROUND WATER

Ground water pumping in San Joaquin County and the Tracy area has been unrestricted, with all water demands not met by surface water met by ground water pumping. This continued pumping may result in continued degradation of water quality by lateral intrusion of higher salinity water from the Delta area, the upwelling of poor quality water from deeper formations, continued decrease in total ground water storage and land subsidence issues related to this decrease. In addition, increased pumping costs and capital costs would be expected due to the installation and redrilling of wells to mitigate dropping water table elevations. Increased ground water salinity in the Stockton area has caused several wells to be abandoned and the reduction in continued overdrafting has been the focus of the San Joaquin County Water Management Plan. Any additional ground water pumping by the City of Tracy to provide an interim supply of water to the TPP will temporarily exacerbate these problems in the Tracy areas and would likely temporarily reduce the problems in the Stockton area. The Stockton area would benefit from the reduction in the gradient from the delta to Stockton. The limited use of the interim water supply is not expected to cause a significant impact to ground water resources. Any impacts would be temporary and would diminish quickly when pumping is reduced. The aquifer in the Tracy area can support the temporary increase in pumping rate. The City of Tracy plans to reduce its use of ground water in the future.

Year 2005 Demand

The January 21, 2003 Water Inventory Report estimated water demand for year 2005 at 16,400 AF. Adding the 4,200 AF to support the TPP brings the total water demand to 20,600 AF for the year 2005, requiring 11,600 AF of surface water to supplement the ground water operational yield of 9,000 AF.

Data reported during implementation of the City of Tracy's Monitoring and Mitigation plan (Tracy, 2003c) was plotted showing total monthly pumping from the Tracy wells. Table 5 presents the volume of increased pumping needed to support the TPP interim demand. A preliminary schedule of maximum expected TPP demands during 2005 as provided by the Applicant to the City of Tracy, was added to Tracy's actual year 2002 pumping schedule to represent the City of Tracy's potential ground water demands during 2005. This is summarized in **Soil & Water Resources Table 5** as follows:

Soil & Water Resources Table 5
City of Tracy's Potential Ground Water Demands
with Impact of TPP in 2005 (Million of Gallons)

Source	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Tracy	214	212	146	198	277	319	323	267	205	190	72	92	2,515
TPP	8	3	3	3	91	94	198	202	196	191	170	173	1,332
Total	222	215	149	201	368	413	521	469	401	381	242	265	3,847

Notes:
1) Using 2002 actual Tracy pumping flow data from all of its wells;
2) The TPP demand schedule assumes the following:
   a) Approx. 8 MG/month would be needed in January for initial tank fill & testing;
   b) Up to 3 MG/month would be needed beginning in March for steam cycle testing;
   c) Commercial operation of the first half of TPP would occur in mid-May 2005;
   d) Commercial operation of the second half of TPP would occur in July 2005;
   (Ref: Midway Power LLC, 2003)

The table shows that the maximum ground water withdrawal under peak demand would be up to 521 million gallons (MG) over one month. Assuming surface water availability is consistent with the data presented in Table 4, the remaining 56% of the Tracy water supply would be met with USBR (and other) contracted surface water.

The target operational yield of the Tracy aquifer is 9,000 AFY, one month of peak demand pumping of 521 MG would equal 1599 AF. The combined pumping from the aquifer from the operating wells would be 12,060 GPM. Municipal pumping in July 2001 and 2002 averaged 7,572 GPM over 7 wells, for an average pumping rate of 1,080 GPM each. If these same wells were to support the peak demand month (including TPP demand), the pumping from the wells would be 1,720 GPM/well.

Tracy Wells 6 and 7

Two new wells have recently been added to the Tracy well field as of January 2003; Well 6 (Park & Ride Well) and Well 7 (Ball Park Well), both nearly 1,200 feet deep. Well 6 tested at an estimated yield of 3,000 GPM with 170 feet of drawdown within the well over 24 hours. Well 7 tested at an estimated yield of 2,000 GPM with 330 feet of water table elevation drawdown in the well. The Lincoln well, which historically has produced nearly 25% of the ground water supply to the Tracy system, is capable of pumping 2,500 GPM (Installed in 1989/90, approximately 1,000 feet deep). Historic data suggests that Lincoln well has been operating at an average rate of 1,200 GPM, approximately half of its capacity (West Yost, 2003; Tracy, 2003c; Tracy, 2003d).

Because of the availability of these new wells, ground water resources appear to be available to support the Tesla project. An estimated additional 11,600 AF of surface water will be required to supplement the ground water supply to meet the overall 2005 water supply demands of both the City of Tracy and the TPP. Over time, the one-time removal of 4,200 AF in one year would likely result in negligible long-term impact to the aquifer, however, the short-term localized drawdown of the water table elevation may impact water quality. For this reason, an evaluation of the short-term, maximum impact to the aquifer was conducted by assuming system peak-demand (July) conditions.

ESTIMATED WORSE-CASE GROUND WATER PUMPING IMPACTS

For the purpose of a worse case assessment, it was assumed that Tracy ground water is extracted to meet the TPP and municipal ground water needs for 2005 including a peak demand month (July) of maximum water usage. The interaction between five of the high-capacity wells in the northern portion of the well field were simulated with the following assumptions based on pumping data reported for 2002:

- Fifty percent of the routine water supply to the City of Tracy is provided by the Lincoln, Tidewater, Lewis Manor (Well #5) and Wells # 6 and 7. This assumption is consistent with the historic operation of the Tracy well field. Because the other wells in the system are distant from these five wells, the simulation did not include the other wells. Pumping rates are distributed based on the proportionate rates reported for 2002 (Tracy 2003c).
- The increased TTP pumpage demand for the year 2005 would be met by increasing the rate of extraction from Lincoln Well and Wells #6 and 7. The total TTP demand of 198 MG/ one peak demand month (4,583 GPM) would be distributed evenly over the three wells with increased pumping as shown below in **Soil & Water Resources Table 6**. This assumption forces the maximum accumulation of drawdown in a limited area and also assumes the other two wells are not pumping greater than they have historically. Appropriate aquifer management procedures would necessitate distribution of the pumping across a wider field so as to reduce localized drawdown
- Based on the limited information provided in the well logs, the aquifer is simulated as 500 feet in thickness (the approximate difference between the bottom of the Corcoran Clay, well depths, and well screen lengths).
- Aquifer storage coefficient of 5.5 x 10-5 (dimensionless), specific storage of 7 x 10-7 (dimensionless), Specific Yield 8%, horizontal hydraulic conductivity of 14 ft/day, and vertical hydraulic conductivity of 11.5 ft/day (Sneed, 2001; Bertoldi, et al, 1991).

Soil & Water Resources Table 6
Estimated Pumping Rates

Well	2002*	2005	Assumed Capacity
Lincoln	1,050 GPM	2,000 GPM	2,000 GPM
Tidewater	436 GPM	436 GPM	2,000 GPM
Lewis Manor	795 GPM	795 GPM	unknown
Well 6	not in use	1,800 GPM	3,000 GPM
Well 7	not in use	1,800 GPM	2,000 GPM

*Source: City of Tracy Third Ground Water Mitigation Monitoring Report: Jan 21, 2003

A schematic, 3-dimensional MODFLOW (Waterloo, 2002) ground water flow model was constructed to evaluate areal differences in drawdown across the northern portion of the Tracy well field. Wells were pumped for 30 days, and differences between ground water elevations due to increased pumping were noted.

Water table elevation drawdown due to pumping forms a cone of depressed elevations around the wellhead. In a well field, the cones of depressions are additive, and a

pumping well can exacerbate the drawdown in an adjacent well, with the area of influence (areal extent of the cone of depression) a function of the rate of pumping and the transmissivity of the aquifer. Simulations were run to assess the relative increased drawdown due to the calculated rate of increased pumping to support the TPP during the peak-demand month of July. Within the model, simulation wells were located in the same spatial distribution as the Tracy well field, and the relative increased drawdown was calculated by comparing aquifer response to 2002 pumping rates and the assumed 2005 pumping rates presented in Table 6. The model domain was approximately 4 miles (east-west) by 2 miles (north-south) and included the five active wells in the northern portion of the Tracy well field. Simulation wells were pumped for 30 days.

Although both the Tidewater and Lewis Manor Wells did not increase pumping rates, the impact of the adjacent pumping wells did induce drawdown in the area of these two wells. Within 250 feet of the simulated Tidewater and Lewis Manor wells, an additional 4 to 5 feet of drawdown was calculated. The Lincoln well exhibited an additional 24 feet of drawdown, Well 6 showed 20 feet of drawdown, and Well 7 represented the greatest drawdown of over 30 feet within 250 feet of the wellhead. The combined cone of depression circled all 5 wells, and deflected the water table gradient across an approximate 2.5 mile by 1.8-mile area.

As expected, increased pumping will decrease the water table elevation in the area of the pumping wells, with the impact ranging between 4 to nearly 31 feet of depressed water elevations across the well field. In the area of Well 7 and Lincoln well (the highest producers), the drawdown may be of sufficient magnitude to induce upwelling of poorer quality water. The hydraulic impact of increased pumping to meet the peak demand needs of the TPP interim supply will be felt across the well field and will be temporary in nature. The impacts will be felt while the ground water is extracted at an increased rate and will decline as the rate of pumping declines. These impacts are very temporary in nature and are not expected to be significant due to the short duration of use of the interim water supply.

COMPLIANCE WITH LORS

Staff concludes that with the implementation of the Conditions of Certification listed in the **Soil and Water Resources** section of the FSA and this Addendum, that the project would comply with LORS and not cause significant adverse effects to surface drainage, surface water quantity or quality, ground water quantity or quality, or result in accelerated erosion and sedimentation.

Construction and operation of the recycled water pipeline would comply with the requirements of the RWQCB's general NPDES surface water discharge permits. Included in these requirements are provisions for spill prevention and response measures, source control, monitoring and sampling specifications, and employee training.

CONCLUSIONS

The City of Tracy is scheduled to be producing tertiary-treated wastewater by January 2006. In the event the TPP is constructed in 2005 prior to the availability of recycled water, the City of Tracy would deliver fresh water as an interim supply.

In the unexpected but potential case, interim water is needed ground water resources appear to be available to support the TPP. Based on the information provided, support of the TPP with Tracy municipal well water as an interim water supply should not result in excessive or permanent ground water overdraft, or significant adverse effects to water quality, and the volume of extraction appears to be within the range of aquifer sustainable yield. Staff also acknowledges that the potential for any TPP startup or operational water demand in 2005 is unlikely, considering the typical minimum 2-year cycle for permitting and construction following approval of similar power plants by the Energy Commission. Construction of the recycled water pipeline and pump stations would not result in any significant adverse effects to soil or water resources. The temporary reduction in the discharge of the City of Tracy's treated wastewater effluent into Old River that would result by serving recycled water to TPP would not result in any significant adverse impacts, and would slightly improve water quality in Old River.

The Central Valley Regional Water Quality Control Board, National Marine Fisheries Service and Contra Costa Water District, highly encourage the reduction in discharge of the City's wastewater into Old River (CVRWQCB 2002a, CCWD 2003, NMFS 2003).

PROPOSED CONDITIONS OF CERTIFICATION

The following Proposed Conditions of Certification applicable to the City of Tracy's Interim Water Supply and the Recycled Water Pipeline are consistent with those listed in the **Soil and Water Resources** section of the FSA for TPP.

Soil & Water-11: Prior to project operation, the project owner shall secure a User Agreement for Reclaimed Water for its process and cooling water supply from the City of Tracy.

Verification: At least 60 days prior to the start of project operation, the project owner shall submit evidence to the CPM that it has secured a User Agreement for Reclaimed Water for its process and cooling water supply from the City of Tracy.

Soil & Water-12: The project owner shall use tertiary-treated water supplied from City of Tracy Waste Water Treatment Plant as its primary water supply source for cooling, process and landscape irrigation. The project owner shall meter in-plant uses of water. The project owner shall prepare an annual summary, which will include the monthly range and monthly average of daily water usage in gallons per day, and total water used by the project on a monthly and annual basis in acre-feet. For subsequent years, the annual summary will also include the yearly range and yearly average water use by the project. This information will be supplied to the CPM.

Verification: The project owner will submit as part of its annual compliance report a water use summary to the CPM on an annual basis for the life of the project.

Soil & Water-13: In the event the TPP is constructed prior to the availability of recycled water and the interim water supply is to be used, the project owner shall submit a schedule of monthly water demand to the City of Tracy for review and comment and to the CPM for approval.

Verification: At least 30 days prior to the initial use of the interim water supply the monthly schedule of interim water supply requirements shall be submitted to the City of Tracy for review and comment, and the CPM for approval.

Soil & Water-14: If connections from the City of Tracy's fresh water distribution system are made to the reclaimed pipeline for serving TPP as an interim water supply, all connections must be severed and inspected at least 24 hours prior to connection of the system to the reclaimed water supply. A copy of the inspection report shall be submitted to the CPM prior to the connection of the reclaimed water supply.

Verification: At least 48 hours prior to the connection of the reclaimed water supply the project owner must inform the CPM of the date and time the fresh water connections will be severed. All fresh water connections must be severed and inspected at least 24 hours prior to connection of the system to the reclaimed water supply. A copy of the inspection report shall be submitted to the CPM prior to the connection of the reclaimed water supply.

Soil & Water-15: The project owner shall not use the interim water supply for more than 45 days once the tertiary-treated water supply has become available.

Verification: The project owner will submit as part of its first annual compliance report a water use summary to the CPM which shall include the date reclaimed water was available at the treatment plant and the date the power plant started using the reclaimed water.

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WORKER SAFETY AND FIRE PROTECTION

Testimony of Alvin J. Greenberg, Ph.D. and Rick Tyler

INTRODUCTION

The purpose of this analysis is to evaluate the staff proposed Reclaimed Water Supply Pipeline alternative in terms of potentially significant worker safety and fire protection related impacts. Please refer to the **Worker Safety and Fire Protection** section of the Final Staff Assessment (FSA) for discussion of worker safety and fire protection issues, appropriate mitigation measures, and proposed Conditions of Certification to ensure less than significant impacts. This section contains staff's evaluation of the potential for additional impacts to fire protection services and worker safety. Staff has determined that the impacts would be insignificant.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Please refer to the LORS listed in the **Worker Safety and Fire Protection** section of the FSA.

ANALYSIS

The City of Tracy Wastewater Treatment Plant is located approximately eight miles east of TPP near the intersection of Arbor Avenue and Holly Drive, north of the City of Tracy. A pumping station would be necessary at the wastewater treatment plant and a second pumping station would be required along the 11-mile pipeline route.

PROJECT IMPACTS AND MITIGATION

Excavation activities may encounter potentially contaminated soils and/or groundwater which may be classified as hazardous waste. Therefore, proper handling procedures may be necessary which are described in the **Waste Management** section of this report. A Phase I Environmental Site Assessment (ESA) has been prepared by staff for the pipeline route and can be found as Attachment 1 to the **Waste Management** section of this report. The Phase I ESA found that the chances of encountering contaminated soil were minimal except at a few locations where staff has recommended that a Phase II ESA be prepared. These few areas include those which may have either pesticide levels in the soil due to agricultural application or contaminants which may have migrated from industrial sites in close proximity to the pipeline route.

An Interim Phase II ESA has been prepared by staff for the pipeline route and can be found as Attachment B to this report. This Phase II ESA is termed an "interim assessment" because it did not address portions of pipeline route segment 3A (see Attachment 2) due to the refusal of the land owner to allow access to the segment to obtain samples. The Interim Phase II ESA found that all samples, except one, had results of non-detect levels for arsenic and target pesticide/herbicides. One composite sample showed detectable levels of 240 ppb Dichlorodiphenyl-dichloroethylene (DDE) and thus the discrete individual samples were analyzed. The discrete samples showed

non-detect and thus no further analysis was warranted. Arsenic levels ranged from 3.6 mg/kg (ppm) to 6.9 mg/kg and are considered to be background for the state of California. The Phase II ESA therefore concluded that trenching and excavation work along the proposed pipeline route within the assessed segments would not likely encounter significant concentrations of either pesticides or arsenic so as to render the soils hazardous waste or which would pose any significant risk to workers. The Phase II ESA also recommended that the final parcels of segment 3A be sampled and analyzed prior to excavation activities.

Worker safety regulations, including those for trenching, confined spaces, and exposure to hazardous wastes must be followed. Please also refer to the **Waste Management** and **Worker Safety and Fire Protection** sections of the FSA for discussions on contaminated soils and worker safety standards that specify appropriate mitigation measures and Conditions of Certification to ensure impacts on workers are less than significant.

Fire protection impacts are not expected to be different from those identified for the construction and operations of the proposed TPP as described in the AFC and can be addressed by adherence to the LORS and proposed Conditions of Certification found in the FSA.

COMPLIANCE WITH LORS

Energy Commission staff concludes that the TPP would be able to comply with all applicable LORS regulating the safety of workers and fire protection measures during construction and operation of the reclaimed water pipeline.

COORDINATION WITH OTHER AGENCIES

No coordination with other agencies regarding worker safety and fire protection is necessary for the reclaimed water pipeline.

CONCLUSIONS

The construction of the recycled water supply pipeline would consist of some earthmoving and routine construction activities. Worker safety regulations, including those addressing trenching, confined spaces, and hazardous wastes, must be followed. The risk to workers would not change significantly with the recycled water supply facility. This is mostly due to the generic nature of worker and fire protection required at a power plant licensed by the Energy Commission.

Fire protection impacts are expected to be no different from those identified for the construction and operations of the proposed project as described in the AFC and can be mitigated by following all LORS and the proposed Conditions of Certification described in the FSA.

Staff therefore does not consider the worker safety and fire protection impacts from the recycled water supply pipeline to be significant.

PROPOSED CONDITIONS OF CERTIFICATION

Please refer to the Conditions of Certification in the **Worker Safety and Fire Protection** section of the FSA.

REFERENCES

References are the same as those in the FSA.

FACILITY DESIGN, RELIABILITY, AND EFFICIENCY

Testimony of Shahab Khoshmasharab

INTRODUCTION

The purpose of this analysis is to evaluate the staff proposed Reclaimed Water Supply Pipeline discussed in the Final Staff Assessment (FSA) for the Tesla Power Project (TPP) from the standpoint of power plant efficiency, power plant reliability, and facility design.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

If the reclaimed water supply pipeline is approved, the same applicable engineering LORS as those designated in the Application for Certification (01-AFC-21) and in the Facility Design Conditions of Certification in the FSA would apply to the design and construction of the proposed pipeline. As stated in the FSA, there are no LORS related to project reliability or efficiency.

ANALYSIS

The pipeline would deliver reclaimed water to the site, via a new 11-mile pipeline, from the City of Tracy Wastewater Treatment Plant, in lieu of the fresh water supply from Rosedale-Rio Bravo Water Storage District proposed by the applicant.

The proposed reclaimed pipeline does not necessitate additional analysis or re-analysis of the project from an engineering perspective, as the analysis associated with the original application has not changed as a result of the above-proposed staff modification. From the perspective of water supply reliability, the fresh water and recycled water alternatives have no clear advantage over one another (see the **Soil and Water Resources**).

COMPLIANCE WITH LORS

Conditions for compliance with LORS have been specified in the FSA.

COORDINATION WITH OTHER AGENCIES

Coordination with other agencies has been discussed in the FSA.

CONCLUSIONS

The pipeline would not impact Facility Design, Power Plant Reliability, or Power Plant Efficiency. Staff does not propose any changes to the Conditions of Certification presented in the FSA.

PROPOSED CONDITIONS OF CERTIFICATION

Conditions of Certification for Facilities Design are in the TPP FSA.

REFERENCES

References are the same as those in the FSA.

GEOLOGY, MINERAL RESOURCES, AND PALEONTOLOGY

Testimony of Patrick Pilling, Ph.D., P.E., G.E.

INTRODUCTION

The purpose of this analysis is to evaluate the impacts of the staff proposed Reclaimed Water Supply Pipeline described in the Final Staff Assessment (FSA) for the Tesla Power Project (TPP) in the areas of geology, mineral resources, and paleontology.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Please refer to the LORS discussion in the **Geology, Mineral Resources, and Paleontology** section of the FSA.

ANALYSIS

The proposed 11-mile reclaimed water pipeline from the City of Tracy Wastewater Treatment Plant (TWWTP) to the TPP site has been mapped by the NRCS (1966; 1992) as passing through Linne clay loam, Capay clay, Stomar clay loam, Pescadero clay loam, and the Willows clay. The Capay clay has a Unified Soil Classification System (USCS) classification of a lean to fat clay (CL, CH), the Stomar clay loam has a USCS classification of a lean to fat clay or clayey sand (CL, CH, SC), the Stomar clay loam and the Pescadero clay loam have a USCS classification of a lean to fat clay (CL, CH), and the Willows clay has a USCS classification of a fat clay (CH). In addition, the surficial geology along the alignment has been partially mapped as Pleistocene to Holocene alluvial fan deposits (Helley and Graymer, 1997). The Pleistocene alluvial fan deposits are described as brown dense gravelly and clayey sand or clayey gravel that fines upward to sandy clay. The Holocene alluvial fan deposits are described as brown or tan medium dense to dense, gravely sand or sandy gravel that generally grades upward. The bedrock geology along the alignment within Alameda County has been mapped as the Tertiary Oro Lomo Formation and Tertiary Neroly Formation (Graymer et al., 1996). The Tertiary Oro Lomo Formation was described as poorly consolidated reddish silt, sand, and gravel. The Tertiary Neroly Formation was described as blue sandstone and minor siltstone, shale, tuff, and andesite-pebble conglomerate.

Based on a literature review and a site visit, bedrock is present where the proposed pipeline crosses the California Aqueduct. At this location, directional drilling is being considered; however, due to the presence of bedrock in this area, the suitability of this method needs to be confirmed as described below in the **Conclusions** section.

IMPACTS

Faulting and Seismicity

The proposed WWTP pipeline alignment is located within Seismic Zone 4, as delineated on Figure 16-2 of the CBC (2000). The alignment crosses the Coast Range – Central Valley Thrust System (CRCVTS), a Holocene (active) fault. CEC staff has calculated

an estimated deterministic peak ground acceleration on the order of 0.59g for the alignment. This estimate is based on a moment magnitude 6.7 earthquake in the CRCVTS. A second active fault, the Greenville Fault, is located five miles to the west of the terminus of the alignment at the TPP plant site. The closest Quaternary (potentially active) fault is the Midway Fault, which crosses the proposed alignment near the plant site (Dibblee, 1980; Sowers et al., 1993).

Liquefaction, Subsidence, and Expansive Soils

The potential for liquefaction along this pipeline route is expected to be low given the clay soils mapped along the alignment; however, a detailed geotechnical investigation and analysis of liquefaction potential and subsidence should be included in the engineering geology/soils report required for final design. The project alignment includes soils containing a high percentage of expansive clay minerals. As a result, the detailed geotechnical investigation referenced above should also address the expansion potential of native clay soils. Overexcavation of expansive clay materials may be required. Since the TPP will obtain cooling water from the TWWTP by 2006, subsidence due to ground water withdrawal for the project is expected to result in no settlement that would impact the pipeline linear.

Slope Failures

The potential for slope failures along the pipeline alignment from the TWWTP to the California Aqueduct is considered low as the topography is generally flat or gently sloping. The potential for landslides along the pipeline alignment from the California Aqueduct to the TPP plant site is considered low to moderate as the topography is characterized by rolling hills and drainage channels. Previous landslides in the area have been mapped by Roberts et al. (1999) who show several landslides greater than 200 feet in length along the pipeline alignment adjacent to Midway Road.

Tsunamis and Seiches

Since the pipeline linear will be constructed underground, the potential for tsunamis and seiches to affect the pipeline is considered negligible. In addition, the nearest large body of water, Bethany Reservoir, is located approximately two miles northwest of the crossing at the California Aqueduct, and there are several large drainages and ridges in-between. Clifton Court Forebay, located approximately 4-1/2 miles north of the pipeline linear at its closest location, is located at an elevation of 1 foot above sea level. The lowest point along the pipeline linear is located at the WWTP at an elevation of approximately 14 feet. Seiches originating from the Delta-Mendota Canal and the California Aqueduct are considered negligible due to the limited volume, depth of water available, and existing side levees.

Geologic, Mineralogic, and Paleontologic Resources

Staff has reviewed applicable publications regarding geologic and mineralogic resources (CGS, 1987; DOGGR, 1982; Larose et al., 1999; Wagner et al., 1990; Dibblee, 1980; Helley and Graymer, 1997). The only known geologic or mineralogic resource along the WWTP pipeline alignment is the Tracy Gas Field (DOGGR, 1982). Impacts to the Tracy Gas Field from the pipeline alignment should be insignificant since gas-bearing strata will not be disturbed by the project.

The Tertiary and Quaternary formations and deposits that the alignment passes through are known to contain fossils in other locations (Midway Power, 2001; UCMP, 2002). Specifically, fossils have been found along the California Aqueduct and Delta-Mendota Canal alignments. As a result, the area is most likely highly sensitive with respect to paleontologic resources, such that the paleontologic Conditions of Certification contained in the FSA would be applicable.

COMPLIANCE WITH LORS

The applicant would likely be able to comply with all applicable LORS. The design and construction of the proposed water line should not be significantly impacted by geologic conditions and/or hazards along the proposed alignment, and the pipeline itself should have no adverse impact with respect to geologic, mineralogic, and paleontologic resources.

COORDINATION WITH OTHER AGENCIES

Coordination with other agencies has been discussed in the FSA.

CONCLUSIONS

The preparation of an Engineering Geology Report and Soils Engineering Report, as required by the Conditions of Certification defined in the **Geology, Mineral Resources and Paleontology** section of the FSA, should address geologic conditions and provide design recommendations to mitigate any impacts due to geologic conditions and/or hazards, in particular liquefaction potential, expansive soils, and the suitability of boring in and around the location where the proposed water line crosses the California Aqueduct due to the presence of bedrock. The adoption of the proposed Conditions of Certification, as defined in the **Geology, Mineral Resources, and Paleontology** section of the FSA, should mitigate any adverse impacts to paleontologic resources.

PROPOSED CONDITIONS OF CERTIFICATION

Please refer to the FSA for the complete list of Conditions of Certification for Geology, Mineral Resources, and Paleontology.

REFERENCES

References are the same as those in the FSA.

TRANSMISSION SYSTEM ENGINEERING

Testimony of Ajoy Guha

INTRODUCTION

The purpose of this analysis is to evaluate the staff proposed Reclaimed Water Supply Pipeline discussed in the Final Staff Assessment (FSA) for the Tesla Power Project (TPP) in terms of potentially significant Transmission System Engineering (TSE) impacts.

LAWS, ORDIANCES, REGULATIONS, AND STANDARDS (LORS)

There are no LORS related to the TSE discipline for water supply pipelines.

ANALYSIS

The pipeline would deliver reclaimed water to the TPP site, via a new 11-mile pipeline, from the City of Tracy Wastewater Treatment Plant, in lieu of the fresh water supply from Rosedale-Rio Bravo Water Storage District proposed by the applicant.

The pipeline does not necessitate additional analysis or re-analysis of the project from a TSE perspective, as no electric transmission lines are associated with water pipeline.

COMPLIANCE WITH LORS

No LORS issues are associated with the TSE discipline for the reclaimed water pipeline.

COORDINATUION WITH OTHER AGENCIES

No coordination with other agencies regarding TSE is necessary related to the reclaimed water pipeline.

CONCLUSIONS

Staff believes that the installation of the reclaimed water supply pipeline would not have any additional or adverse TSE impacts.

PROPOSED CONDITIONS OF CERTIFICATION

No new Conditions of Certification are required for TSE.

REFERENCES

References are the same as those in the FSA.